Lecture to Nutritionists

THE NUTRITIONAL STATUS OF JAPAN

1. Japan's food situation, like that of most countries in the world, at this time, is a complicated one. It involves not only the question of the quantity of food available in the country, but such problems as:

Collection of food from the farmer
Rationing
Price of food and money with which to buy
Movement of food from one area to another, or distribution

2. The function of Public Health and Welfare Section of SCAP, to obtain factual information on the nutritional status of the population and the quantity of food actually eaten by the average person and the sources from which it is obtained whether it be the ration, purchased in the market, raised at home, or by gift.

3. Nutritional health is related to an adequate intake of a number of nutrients-calories, protein, fat, inorganic salt, vitamins and water. Calories may be taken as a rough index of the adequacy of the food supply of people of a country. A sufficiency of calories on the other hand may not represent a good dietary, especially when they are used to measure only the staple foods such as grain products. This is especially true of grain products that have lost much of their nutritive value in the processes of manufacture - such as polished rice and white flour. Calories do not measure the leafy green vegetables, including grass and other vegetables and fruits which are necessary to complete the dietary because they are important for other supplementary nutrients and are relatively low in calories. The adequacy of the dietary of one country is sometimes measured in terms of the food habits of another, such as the comparison of the food habits of Japan, high in cereal products, with those of the United States, rich in animal products. Such comparisons are open to question because there are often considerable differences in the quantities of the same foods consumed in each country and the use of foods not common to both countries.

These differences may lead to satisfactory dietaries in both cases.

4. Considerable confusion has been evident in the use of the term calorie in describing food situations throughout the world. In dealing with food problems the caloric value of food has been used in three general ways in relation to the total caloric requirement as follows:

a. The actual caloric consumption
b. The caloric equivalent of the food ration
c. The caloric equivalent of staple foods of the ration

5. Comparisons are made, unfortunately, between the total caloric consumption from all sources in one locality with the caloric value of the ration in another or with the caloric value of the staple foods in a third. Statements and comparisons have repeatedly been made expressing the idea that people are living on 300-600 calories a day, when the fact these people are living in relatively good health is evidence that they are actually consuming more than that, else they would have died. It is necessary, therefore, in discussions pertaining to food, to distinguish between the uses of the term calorie and to know the basis on which the discussion is based. The situation can then be evaluated in terms of that basis in relation to the probably actual food consumption and nutrient requirements.

6. Caloric consumption requirements may be divided into two parts; basal metabolism requirements and those required for work and activity.

a. Basal metablic requirements. The basal metabolic rate is a scientifically measurable value, expressed in calories as the energy requirement of the human body at complete rest. This requirement maintains vegetative functions of the body and must be supplies if the human being is to continue to live, without drawing on his body reserves and ultimately perish. It is measurable and not a matter of opinion. It varies with the size of the individual, even in the same individual if there is a marked change in body weight accompanying decrease in activity the basal metabolic rate may be lowered 15 to

to 25 percent. The basal metabolic rate and daily caloric requirements of the average human occidental body at complete rest is 1700 calories for the adult male and 1400 calories for adult female, with an average of 1550 calories for the average occidental adult. The bassal metabolic requirements of the Japanese are less, chiefly because they are smaller. The average rates are: adult male - 1470 calories, adult female - 1100 calories, and for the average adult 1285 calories. These values are approximately 82% of those required for the Occidental. If the food consumed does not supply the energy to meet the basal requirements, the tissues of the body itself are utilized. If no food is consumed, individuals will die in from 15 to 40 days. It is obvious, therefore, that it is scientifically impossible for a human being to live long on 300 calories. Later in today's discussion, the caloric equivalent of the food ration supplied the Japanese people will be discussed. The ration is not equal to the caloric consumption of any group of individuals nor in the staple food component of the ration (which is still smaller) equal to the rations. Failure to recognize these facts have lead to confusion in assessing the nutrition of the Japanese.

b. Additional caloric requirements. As soon as a person gets up in the morning his caloric expenditures increase about 13% for just being awake while movement and work require even more energy. The total daily caloric requirement of the average Occidental male increases from 1700 calories at rest to 2500 calories for light work. By light work is meant that an individual will be able to move about, go to and from his work and to perform work characteristic of a sedetary occupation. For on Oriental, based on 82% requirement in relation to an Occidental, a Japanese should be furnished 2125 calories to carry out a minimum civilian program. A population is however, composed of a variety of people, women and children who require less energy than the sedentary man, farmers, miners, textile and transportation workers and other essential workers

who require more energy, as well as the normal consumers and light workers. An over all average of 1800 calories is the consumption requirement and does not in anyway represent the caloric equivalent of the ration supplies the portion of the population which is rationed. The ration in Japan has so far provided only approximately 55% of the food actually consumed. The remainder of the food has been obtained from the black or free market, home gardens and gifts from friends or relatives. The staple food in the ration represents only 80% of the ration. It is this component of the ration which is most often confused with the total caloric consumption, particularly because wheat, rice, corn and potatoes are the items most frequently shipped into countries requiring food relief.

7. Nutritional status and consumption.

a. In order to determine the facts as to the actual nutrition status and food consumption in Japan nutrition surveys were conducted, first in the critical urban areas of Tokyo in December 1945, and subsequently during the month of February. These surveys were carried out on a cross section of all economic groups, all age groups and all sub-areas included within the general areas of the survey. Individuals were physically examined for clinical evidences of malnutrition which are scientifically and medically determinable, and are not to be confused with the widely accepted view that weight loss alone is indicative of malnutrition. The facts determined were:

(1) The actual daily meal by meal consumption of families represented.
(2) The composition of the food consumed.
(3) The sources from which the various components of the food consumed were obtained.

The same procedure was carried out in subsequent surveys,has been repeated during the month of May, and will be repeated the month of August and the month of November and as long as the food situation is critical.

b. One percent of the population was actually examined in each area. In Tokyo 31,965 individuals of a population of three million were examined, and 29,257 in each of the four cities of Kure, Osaka, Nagoya and Fukuoka, and 64,543 individuals in 19 rural areas. These surveys have shown the actual nutritional status and food consumption of the Japanese people. It was found that the food consumed in the Tokyo area in December by the normal urban consumer (an average of men, women and children) was 1971 calories, 171 calories greater than that recommended to the War Department as the minimum consumption requirement to prevent disease and unrest.

The average consumption in the four cities in February was 1677 calories. As could well be expected in the rural areas of 19 prefectures, where food was actually available in the hands of the farmers, the average consumption was 1963 calories. These figures can be compared with the pre-war consumption represented to be 2377 calories for all of Japan. In the Tokyo surveys, of the 1971 calories found only 1090 calories were abtained from the ration. The people were not living on 1090 calories but on 1971 calories. The remaining number of calories were obtained from black market, home production or gifts from relatives and friends in the country. In the four cities surveyed in February, 1092 calories were obtained from ration while that obtained from black market had dropped to 443 calories. In the rural areas where the greater part of the unrationed portion of the population exists, only 471 calories was obtained from the ration and 1388 calories from home production.

The Tokyo survey has initially brought out the fact that the Japanese people, due to a break-down of control over the large sweet potato crop were consuming food at a far greater rate in December than was indicated by considering the ration alone.

c. Composition of Food Consumed. The surveys showed that rice represents 55.8% of food actually consumed, potatoes 13.9%, other cereals such

as wheat, 16.4%. Marine products, 3.8%, provided the greater protion of the animal-protein content of the diet, while meat, eggs and dairy products, which are so important in Occidental countries, provide only three-tenths of one percent for the Japanese.

d. Nutritional Deficiencies. The physical examination of the people surveyed for clinical evidences of nutrition showed the people to have been in reasonably fair physical condition, and that the physical symtoms related to nutrition tended to be less prevalent in the prefectures around Tokyo than in other prefectures and cities.

Percent of Persons Examined Manifesting Symptoms

Disease	Tokyo December '45	Four Cities February '46	19 Prefectures February '46
Anemia	6.9	10.2	2.3
Cheilosis	9.7	8.7	10.7
Glossitis	3.7	3.7	2.5
Loss of Knee Jerk	10.9	6.1	4.6
Edema	4.1	4.0	1.6
Hyperkeratosis	2.9	4.4	2.1
Chronic Diarrhea	2.9	2.1	0.9
Bradycardia	2.4	4.8	3.0
Delayed Menstruation	19.3	21.1	9.8

On the whole, the incidence of symptoms indicative of malnutrition were well within the range normally found in the average population. It is interesting that in a separate study there were indications that the incidence of beriberi dropped approximately 50% during the war as a result of a greater diversity in the diet of the Japanese people and the substitution of other foods for rice, due to the rice shortage. The shortage of rice which required consumption of other foods was actually beneficial.

Summary:

a. Statements and comparisons are made with regard to the caloric intake of populations based upon different premises, particularly, the food ration, the staple food components of the food ration and the total intake. It is essential to know and take into consideration the basis on which statements are made and the relation of the caloric values given to the total caloric requirements of the population.

b. Nutrition surveys of the Average Japanese population in December 1945, and February 1946 revealed that when the surveys were made there was no evidence of widespread malnutrition in Japan. Similar surveys have just been completed and others will be made in August.

c. The caloric value of the food available, consumed or rationed is an overall index of the quantity of food. It does not, however, completely describe the adequacy of the dietary in relation to health for it does not adequately represent essential foods low in calories.

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DEPARTMENT OF THE ARMY, SGO, WASHINGTON, D.C.

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GERMANY

ROUTINE

FROM EUCOM

IT IS PROPOSED TO PLACE THE FOLLOWING PERSONNEL ON APPROXIMATELY SIX MONTHS TEMPORARY DUTY TO YOUR COMMAND EFFECTIVE ON OR ABOUT ONE SIX MAY ONE NINE FOUR NINE FOR THE PURPOSE OF OBTAINING ORIGINAL DATA ON FOOD CONSUMPTION AND NUTRITIONAL STATUS OF POPULATIONS FOR ANALYSIS AS TO MINIMUM NUTRITIONAL REQUIREMENTS OF POPULATION IN TIMES OF EMERGENCY PD MISSION WILL INCLUDE THE LOCATING OF ORIGINAL RECORDS OF NUTRITION SURVEYS CONDUCTED IN GERMANY AND AUSTRIA BY BOTH ARMY AND GERMAN NUTRITION SURVEY TEAMS INCLN AS WELL AS OBTAINING CERTAIN DATA OF A STATISTICAL NATURE RELATING TO NUTRITION DURING THE PRE WAR CMA WAR CMA AND POST WAR YEARS CLN DOCTOR PAUL EASY HOWE CAN NUTRITION CONSULTANT INCLN FRANK LOVE LONCEN CMA ADMINISTRATIVE ASSISTANT CMA UNITED STATES DEPARTMENT OF AGRICULTURE INCLN MRS PAUL EASY HOWE CMA WIFE AND PERSONAL ASSISTANT TO DOCTOR PAUL EASY HOWE PD ACCOMPLISHMENT OF MISSION WILL REQUIRE ADDITIONAL CLERICAL ASSISTANCE TO BE RECRUITED WITHIN THIS THEATER AND TO BE PAID BY ABOVE GROUP FROM FUNDS ALLOCATED FOR THIS MISSION PD SIGNAL CORPS PERSONNEL WILL BE REQUIRED TO PHOTOGRAPH RECORDS THAT CANNOT BE RETURNED TO THE UNITED STATES PD PROPOSED VISIT WILL REQUIRE BILLETING CMA MESSING CMA TRANSPORTATION AND SUCH OTHER PRIVILEGES AND ARRANGEMENTS AS MAY BE APPROPRIATE PD REQUEST YOUR CONCURRENCE FOR VISIT OF GROUP TO SUCH PLACES WITHIN YOUR COMMAND AS MAY BE REQUIRED FOR THE SUCCESSFUL ACCOMPLISHMENT OF THIS MISSION

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NUTRITION MISSION FOR THE OFFICE OF THE SURGEON GENERAL
APO 807

38

Dr. C. H. Hammar, Chief of Agricultural Research, FAO — January 18, 1950
APO - 757

Dr. Paul E. Howe, Chief, Nutrition Mission

Planning a Food and Nutrition Program for Germany

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PLANNING A FOOD AND NUTRITION PROGRAM FOR GERMANY

Germany has passed through a period of food shortage due to lack of home production and inability to import food. There may be future periods when restricted purchasing power will result in inability to obtain sufficient food, at least for groups of people. The rate of increase of population of Germany, as of the world, will require, in the future, the most effective use of its resources. There will be competition between man and animals for food, an increased direct consumption of farm products and by-products by man, and by animals the maximum effective use of pasture and of the least acceptable vegetable products and by-products of manufacture. Animal products will become at least proportionately less plentiful. This will mean either controlled distribution for a reasonably equitable distribution or less and less animal products for low income levels of population. Plans should be laid for the maximum production of milk and its collection and use, particularly the non-fat solids. This may well involve encouragement of canning, drying and evaporating milk as well as cheese making rather than distribution of fresh milk.

Some of these changes in dietary habits will take place by force of circumstances. In so far as these modifications can be anticipated the impact upon the population will be lessened if they are appreciated, the problems and expected reactions of the people studied and information concerning their implications presented to the public. Such presentations should be in the form of established facts with regard to dietary requirements and should not present changes in dietary habits as an impending catastrophe. They should include scientific facts about food values, nutritive requirements and the variety of ways in which adequate dietaries may be attained, the extent to which

PLANNING A FOOD AND NUTRITION PROGRAM FOR GERMANY

food folklore is justified and how the food habits of the past have been tied to production, and emphasize the developments of science which have modified our concepts of nutritional requirements in terms of common foods. With such information already before the public it may be drawn upon, when needed. It will have been accepted as it appears and, when special circumstances require sound advice on dietary changes there is greater likelihood that it will be accepted than if it were brought forward as new procedures to meet critical conditions.

The knowledge of nutrition is advancing to the point where it is possible to justify an adequate dietary with a minimum of animal foods although animal foods and especially milk, remain the simplest and most satisfactory means of supplementing a diet of grain products and vegetables. The most difficult problem is that of getting people to accept a diet primarily of vegetable origin. Acceptance will be aided through the use of the minimum of animal products to make vegetable foods more palatable, and the development of acceptable by-products from the less palatable vegetable foods that retain the maximum inherent nutrients, especially those required to supplement the deficiences of the primarily vegetable diet.

Some of the problems of living on restricted diets were considered when Germany undertook to attain self sufficiency prior to World War II. It is my understanding that efforts at public acceptance were more in the form of propaganda for particular foods than education for good nutrition.

A sound nutrition program for the future must be based upon (1) a comprehensive study of the needs of Germany at the governmental level and (2) carefully formulated plans for the immediate present and for the future. It involves agreement between all governmental agencies concerned with food

production and distribution and the agencies concerned with public information and education as to basic principles, with regard to nutritional needs, food production, distribution, and preparation and channels and methods of education.

Plans for the future food program for Germany must take into consideration:

1. Factors which at present influence food practices.
   a. Past German food habits and beliefs.
   b. Psychological reactions to a shortage of food which result in;
      (1) Tendency to overeat.
      (2) Desire to return to previous dietary habits.
2. Rate and degree of economic recovery.
3. Increase in population.
4. Patterns of food production within Germany.
5. World food supplies.
6. Data on nutritional status of the people.

Solution of future problems will be simplified and furthered by:

(a) Review and analysis of the present food resources of Germany.

(b) Study of the changes in production that will be required to provide adequate nutrition within its resources and economic capacity.

(c) Development of plans for such production, and

(d) Education and indoctrination as to good nutrition.

Such plans must be based upon the food patterns of the population as a whole and provide for the special segments of the rural population and cities as they differ in different parts of Germany. The immediate needs of the various regions and cities must be determined by such a review. Educational and child and adult programs and demonstrations designed to improve or modify dietaries within the food patterns must be based on material representative

of characteristic levels of income.

Educational programs in nutrition can be developed in terms of food groups made up of nutritionally similar foods and of specific foods that are unique, and based on the quantities of such foods that are customarily used or needed. The special foods for a region or season can then be emphasized within such groupings. Suitable consideration must be given to:

(a) Cost and availability of the different foods in the group.

(b) The effects of processing, storage and preparation on nutritive values, at different seasons of the year.

(c) The need for preservation of foods for off-season supplementation;

(d) The extent, economy and effectiveness of home preservation versus commercial preservation, especially on farms.

(e) The loss of nutritive value in processing vegetable foods.

(f) The fortification of basic foods to help to correct the major deficiencies of low income families and the extent to which such practices will reach the rural population and meet their nutritional problems.

(g) The effect of over-milling upon the adequacy of dietaries.

(h) The advantages and disadvantages to animal production and methods of meeting the requirements of animals when the decision is in favor of high extraction rates for flours for the benefit of man.

(i) The advantages and disadvantages of preparing concentrates from vegetable products both in relation to human needs and consumption and to animal production.

(j) The possibilities of developing acceptable and economical products or by-products that will improve the diet of man and utilize sources of food not customarily eaten or will increase animal production.

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(k) Methods of home preparation that will retain nutritive values and increase palatability and acceptability of food.

(l) Methods and programs for education and the dissemination of information.

Study, review and planning of this kind should be continuous. Effective results will require two types of consideration (A) scientific and technical and (B) policy.

(A) The scientific and technical study and recommendation should properly be conducted by two Boards or Commissions.

1. Food and Nutrition, to consider the problems of man.

2. Agricultural Science, to consider problems of production, both animal and vegetable.

Both Boards may properly consider the modification of farm and fishery products through storage and processing. Each Board should have a representative on the other Board.

These Boards should represent the best thought in Germany and be non-political in nature. They would be composed primarily of scientists in the various fields of science involved together with a representative, or two, of technical branches of the industries concerned. Governmental representatives would properly be liaison members. Provision should be made for rotating membership.

The Boards should draw upon interim special groups or sub-committees of technical experts for consideration of specific problems.

The considered opinions of the Boards and their findings in relation to factual material should be made available to the public. They may properly consider governmental policy in which case public dissemination of its recommendations should be made through governmental channels.

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(B) Policy matters would be considered by a Food and Nutrition Council, which would review governmental policy and action. It should be attached to the Office of the President of the Bundesrat or other non-operating agency. The Council would be composed of representatives of each of the Ministries concerned with food and nutrition (Agriculture, Education, Public Health, Commerce, Transportation, etc.) together with an opposite number who is a scientific specialist in the major field of the Ministry. (These specialists might come from government supported universities or agricultural college, but not from an operating governmental agency). The Chairmen of the two Scientific and Technical Boards, provided they were not operational governmental personnel should be ex officio members. The Council should depend upon the scientific boards for information but should not be in a position to control their deliberations. The Food and Agriculture Organization of the United Nations has recommended that all countries establish a Council on Food and Nutrition, The proposed Council could serve this purpose.

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ANIMAL FOODS AND ANIMAL FEEDS

By PAUL T. HOVE

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Farm animals contribute in many ways to the health, welfare and satisfaction of man. At this time we are considering animals especially as a source of food; meat, milk and eggs.

Animals compete with man for the food of the world. As the population of the world increases man will consume more and more of the plant products, grains or cereals and plants that he likes and that contribute to his health and welfare. Precedence will then be given to animals that can live and produce effectively on pastures, roughages and the less interesting and important parts of grains.

on ground not particularly suited to production of crops.

If man is to continue to enjoy and have the benefits of animal foods, the improvements in breeding and feeding animals will give preference to animals that make the best use of feeds, such as pasture and roughages, and to farm practices that will obtain and retain the maximum nutritive value from such foods.

Animals gather the grasses and forages in the fields and eat the hays and silages and convert their constituents into meat, milk, fat and eggs for our health and enjoyment. We all enjoy animal foods often without realizing their importance in our lives and the extent to which they are necessary or unnecessary.

What is / . . .

What is the nutritional importance of animal products? In meat the animal has converted plant proteins and amino acids into proteins that are similar to our own proteins. Hence animal proteins are more efficient than plant proteins. At the same time the animal has obtained from plants important vitamins and minerals that we require. Likewise in milk and eggs the cow and hen have concentrated calcium and riboflavin in the skim milk and egg, calcium in the shell and Vitamin A in the fat and yolk for the calf and young chick respectively. These are important supplements to our diet: The particular importance of animal products as compared to plant foods is, then, in the character of the protein and the fairly high concentration of vitamins and minerals. This is especially true of riboflavin or Vitamin B_2 and calcium in the case of milk. These two nutrients are those that are most likely to be deficient in the diets of many peoples in the world. The development of our knowledge of nutrition has shown that the superiority of animal products sometimes ascribed to proteins is, in fact, often due to the vitamins and minerals associated with the protein rather than protein itself.

I have purposely omitted fat in reference to man's nutritional needs because man can obtain fat from plant sources and the vitamin A or yellow carotene of milk, eggs and the yellow fats of cattle from the carotene of plants or the fats of fish. Fat is important for the quality of animal products and the enjoyment of man but in the

competition /...

competition of the animal with man for the foods of the world and the maximum production of animals and their products it is undesirable to use cereals to fatten animals beyond the experimentally established point necessary to obtain an acceptable quality of meat.

The advances in the science of nutrition of animals have contributed to our knowledge of the nutritional needs of man as well as of the animal itself. Comparison of the requirements of animals of various sizes and kinds has enabled us to predict man's needs. This knowledge of the nutrient requirements of man and animals has led to a better understanding of the composition of foods and feeds, the type and quantities of foods necessary for health, and improved methods of production, storage, manufacture and preparation of food. The proper application of this knowledge will do much to improve the h alth of both man and animals and the production of animals.

We are now able to classify foods and feeds not only as important sources of protein, fat, carbohydrate and calories but also as sources of vitamins and minerals. This knowledge enables man to make the best use of the food of the world and to feed animals more effectively.

The whole grain or cereals and many of their products are important sources of carbohydrate, for energy or calories, fats, containing essential fat acids, vitamins of the B-complex and phosphorus. Pasture grasses and forages supply protein, iron, calcium, vitamin of the B-complex and, especially, carotene the primary source of Vitamin A in man and animals.

It is the leaves of plants, the leafy green vegetables in the diet of man and the /..

diet of man, and the pasture grasses and green hays and forage for animals that are important supplements to the grains. In the diet of man animal products may partially take the place of leaves because the animal has obtained some of the necessary supplements from the leaves.

Young leaves are rich in protein and vitamins. As the grass grows it has more stem and indigestible material and is then less valuable as feed. A high proportion of leaf in pasture or hay is, then, an important practical indication of the value of the grass or hay for the animal.

The carotene of leaves from which vitamin A is obtained is easily destroyed by oxidation and some of the minerals and water soluble vitamins are leached out by water. These losses from the newly cut hay are the reason for special attention to the curing and storage of hay. It is necessary to dry hay rapidly and protect it as much as possible from rain. When the best hay cannot be put up or it is brown or leached in drying, it is important to consider ~~that~~ what supplements must be added for good animal production and make the proper corrections. Even when hay is properly made, carotene is lost during storage so that hay a year old even when kept under the best of conditions is practically useless as a source of carotene.

Two other important feeds are the seeds of legumes, rich in protein, phosphorus and fat and potatoes which have a fiarly good protein and when eaten in large quantities make an important contribution in protein, vitamins of the B-complex and vitamin C.

Efficient animal production depends upon the maximum use of feeds

grown/..

grown on the farm with the minimum of purchased feeds. The advances in the knowledge of nutrient requirements of animals and the composition of feeds has made it possible for the farmer to evaluate the extent to which he can meet the needs of his animals for good production and the supplements required and available for them. There are many by-products from the manufacture of foods and products from plants and animals. In such processes some nutrients are concentrated and in others reduced in comparison with the original food or feed. Knowledge of animal nutrition makes it possible to choose from these products those that will best supplement the farm feeds at the lowest cost.

The special advances in the knowledge of nutrition of animals include a) the needs in kind and amount of vitamins and minerals for effective milk, egg, production and the growth of animals; b) the importance of the activity of microorganisms in the gastro-intestinal tract of animals for the growth and health of animals and the presence of certain vitamins in milk and meat; c) the presence of a vitamin or vitamins, vitamin B_{12} necessary for the existence and growth of young animals and known to correct certain types of anemia; d) methods of determining amino acids which have opened up a better understanding of protein requirements and methods of meeting them; e) the use of radio active or marked elements in studying nutrition and body processes.

It is the application of the specific information on animal requirements for nutrients and their sources that will make it possible for man to utilize the foods of the world to the best advantage and continue to consume animal products for his health and pleasure.

Paul E. Howe

Nutrition Consultant
Bureau of Animal Industry
U. S. Dept. of Agriculture

I Inter. Congres Zootechnique 1949

FACTORS TO CONSIDER IN PRODUCING ANIMALS FOR HUMAN FOOD

BY DR. PAUL E. HOWE

I International Congress Zootechnique 1949

We are here, primarily, to discuss animal science, its development and its economic application for the benefit of man; both for his health and for his satisfaction. Since it has been my duty during recent years to consider the nutritional problems of populations in various parts of the world, including Europe, I would like to make some observations on the nutritional aspects of animal products. There is today much discussion of the nutritional problems of the world, of the possibilities of improved health through a better diet. This is fostered by the Food and Agriculture Organization of the United Nations and emphasized by the recent award of the Nobel Prize for 1949 to Lord Boyd Orr, first director for his crusade for better nutrition both for its benefit to the individual and as a factor contributing toward world peace.

In considering the problems of Zootechnology we must look at them not only in terms of present day production conditions or of the pecuniary advantages but in relation to the future problems of the world. We must consider the animal produced for human food in relation to the total world food supply, what animal products contribute to the health and satisfaction of man and what direction our research should take to make the best use of the total supply of foods. Our answer must rest on (a) the extent to which animals compete with man for the food of the world and (b) on the unique contributions that animals and animal products make to the health and welfare of man.

As the population of the world increases man will reserve more and more of the foods, especially the cereals, and grains for his own use. Preference will be given to animals that can produce and grow on foods least acceptable to man and to methods of feeding them which will contribute to the same results. The feeds allocated to animals will be those that are not acceptable to man, such as the coarser grains, roughage and pastures. The leafy green plants are an important part of mans' dietary. There will be some competition between man and animals for the grasses. This is exhibited even now in the United States where young grass, such as wheat and alfalfa, in the early stage of growth are commercially cut and dried so far principally for poultry feeding, but also packaged and sold for use by man. As a matter of fact the product is a good vitamin supplement. Another case is the use of young green alfalfa for human food in the Near East.

By-products from the processing of human food are available for animal feeding. However, as competition increases man will undoubtedly take for his own use the more important portions of what are now by-products. This may create new problems as it did in war-time.

The justification for the use of animals for human food is the extent to which they are unique in supplying mans' needs as compared to plant products, or to products that can-be manufactured, or as they can be converted into acceptable and useful products.

The unique characteristic of animal products as food lie in their proteins, their essential nutrients such as the vitamins, hormines and

and calcium. Mans' interest in them, however, is strongly associated with the fats - i.e. the fat of meat and the cream or butter of milk. So far nothing of nutritional importance except Vitamin A has been shown to reside in the fats of animals that cannot be obtained from plant fats. As a matter of fact man obtains the largest proportion of his Vitamin A from the carotinoids of plants. Search should continue for evidence of the special nutritive value of fats. In general, however, animal fats are concerned with the palatability and the acceptability of animal products themselves and to add flavor to the bland vegetable foods.

The importance the average man places upon the fat of animal products has unfortunately lead to the failure to utilize the more nutritionally important parts of the animal to the greatest extent. Thus we find that butter commands a premium in the market and that skim milk, with its protein, calcium, riboflavin and other important nutrients is fed to farm animals. We find that often when cheese is made the whey is thrown away or fed to animals. In the case of meat animal and eggs, the bones and shells, sources of calcium, are discarded or made into fertilizer. Industry is making some moves to conserve the calcium of these products for man by including bone in the human diet. Thus in one country bones are finely ground and cooked with meat in canning, and in another, very finely pulverized bone has been used advantageously in manufacture of confections. In some countries the bones of small fish are eaten and furnish an important source of calcium.

Industry has also taken steps to conserve the whey of milk with its riboflavin, converting it into palatable products.

The conversion of the carbohydrates of grains into the fat of animals for use as human food is an inefficient process as compared to their direct

utilization by man. The advantage of considerable fat in such animal products from the point of their consumption by man is basically to increase the palatability and acceptability of the product. This is desirable up to a certain point after which further increase in palatability is slow and the additional fat is not utilized directly, but is used in competition with vegetable fats in the preparation of food or for other purposes. There is considerable evidence that this maximum point is a "good" quality beef, as contracted to "choice" or Prime" as recognized in the United States, and with the Wiltshire side in the case of the swine. There is a need from the nutritional standpoint to develop competition for quality of meatin animals as exhibited at our live stock expositions along with, if necessary, competition for fat animals.

If it is shown that the most important nutrients of milk are the non-fat solids or skimmed milk then there will be no place in a highly competitive future for high fat milk. There may be a place for high fat milk to obtain the maximum amount of butter and cheese in areas far removed from central markets and manufacture or where transportation is a problem. As the world becomes more densely populated or transportation improves even these areas should produce low fat milk and cheese.

It is obvious that in the future development of farm animals through breeding and feeding must be based on the maximum use of the coarser feeds and attention given to ways to obtain maximum growth in the animals or maximum milk production with the minimum of fat that will yield an acceptable food. This means that attention must be given to the inherant quality of the product as well as to the total yield of animal or milk. Quality must include the vitamins necessary to supplement mans' dietary where based

largely on grains, grain products and leafy vegetables. Fat alone will not be the criterion of quality although it will continue to be a major factor. In the case of meat, strains of animals that grow rapidly with the maximum muscle development and quality with the minimum of fat would seem to be the goal. Quality of meat may then be an inherent characteristic of particular strains of animals and perhaps methods of feeding, rather than degree of fatness as at present which is often the measure of expected quality.

In so far as the use of wool or hair, or skins of animals is concerned they are already in competition with the synthetic fibers and plastics made from plant products. Attention will need to be given to the special qualitities of the animal products and their unique uses that cannot be replaced by the synthetic products.

All these problems are a challenge to the animal breeder and feeder. Animals and animal products will continue to contribute pleasure and profit to man as well as to serve as a source of nutrients. If my assumptions are correct the experimental animal breeder and feeder must set his goal far in the future looking toward the types of animals I have indicated while at the same time meeting the immediate demands of the present.

This meeting in itself is important for it brings together men from all parts of the world who are working in the field or animal husbandry. We have knowledge of an experience with different types of animals and different methods of feeding. This experience in feeding and breeding in one country or the animals developed for a particular purpose may be in part at least, the solution of the problems of another country. Thus pooling our knowledge may lead to an earlier solution of special problems than would be possible if each country were to work alone.

NUTRITION MISSION FOR THE OFFICE OF THE SURGEON GENERAL
APO 807

February 20, 1950

Dr. A. Hanau,
Landwirtschaffliche Forschungsanstalt,
Braunschweig-Volkenrode,
Germany.

My dear Dr. Hanau:

The Nutrition Mission for the Office of the Surgeon General is collecting information on the nutritional status of Germans following the war. We are attempting to compare conditions after World War I with those after the recent war.

We are interested in the food patterns of the people just before and after the wars particularly the average consumption of the following food groups - for Germany as a whole and for Wuerttemberg-Baden or Stuttgart in particular. (The latter because of the physiological data available):

(a) Fleisch, Fisch, Gefluegel und produkte.
(b) Milch und Milcherzeugnisse.
(c) Eier.
(d) Getreide-orde Korn und Produkte.
(e) Huelsenfruechte.
(f) Gemuse
    (1) Gruenes Blattgemuse, (Kraut, Spinat, Salat, Wirsing, Akersalat.
    (2) Gelbe gemuse (Mohrruben, gelbe Gurkin, u.s.w.)
    (3) Tomaten.
    (4) Andre art.
(g) Kartoffeln.
(h) Obst.

You may not be able to subdivide the vegetables as much as this. It is nutritionally desirable to have information on the Gruenes Blattgemuse and gelb gemuse whenever possible.

In Stuttgart, recently, I inquired of Dr. H. Roehm at Hoenheim, but he could only give some data after 1924. He suggested that I write to you because your institution is engaged in the study of such questions.

We will appreciate any assistance you may give us.

My address until April 15 is:

HICOG - E and CR Division
Medical Affairs and Public Welfare Branch
APO 807, U. S. Army Germany

After 15 April:

Animal Husbandry, BAI
U. S. Department of Agriculture
Beltsville, Maryland

From Dr. Roehm's description of your institution I should visit it before returning to the United States and I hope to do so.

Very truly yours,

Paul E. Howe
Chief
Nutrition Mission

Dr. Paul E. Howe
Nutrition Mission
HICOG, E & CR Div.
MA & PW Branch
APO 807, U.S. Army Germany

Anl. 3

Die sieben Grundnahrungsmittel

Gruppe I - Gelbe, Gruene und Blattgemuesesorten

Gruppe II - Tomaten, Kraut, Rhabarber, Erdbeeren, Citrusfruechte

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Gruppe III - Kartoffeln und andere Fruechte- und Gemuesesorten

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Gruppe IV - Vollkornbrote und Naehrmittel

Gruppe V - Fleisch, Fisch, Gefluegel, Eier, Huelsenfruechte

Gruppe VI - Milch und Milcherzeugnisse

Gruppe VII - Butter, Margarine, Schweine- und Gefluegelschmalz und andere Fettarten

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Im Jahre 1941 arbeitete ein Ernaehrungs- und Nahrungsmittelsachverstaendigengremium in Washington einen Plan aus zur Aufklärung der Bevoelkerung in Ernaehrungsfragen. Hierzu galt als erste Voraussetzung, die Angaben einfach und leicht einpraegsam zu halten, damit die gewonnene Kenntnis ueber hochwertige Ernaehrung im taeglichen Leben angewendet werden konnte. Bei den zur Erhaltung eines gesundheitlichen Hoechststandes empfohlenen Nahrungsmitteln galt die Voraussetzung, dass sie fuer alle Bevoelkerungskreise finanziell leicht erschwinglich sein mussten. Das Gremium hat die oben angef. " sieben Grundnahrungsmittel " namhaft gemacht in der Einsicht, dass, wenn jeder etwas von den in diesen sieben Gruppen angefuehrten Nahrungsmitteln taeglich zu sich nimmt, es weder schlecht - noch unterernaehrte Menschen geben wuerde.
Andererseits erkannte das Gremium, dass ausreichende Ernaehrung auf viele Weisen mit einer geringeren Zahl von Lebensmitteln sicher gestellt werden kann, wenn groessere Mengen dieser Lebensmittel gegessen werden. Das gilt besonders fuer die Gruppen I, III, IV und VI.
Bei den einzelnen Gruppen waren folgende Ernaehrungsgesichtspunkte massgebend: Gruppe I ist die wichtigste unter den Gemuesesorten, da besonders gruene Blattgemuese mehr Naehrstoffe zum taeglichen Speiseplan beisteuern als alle anderen Gemuesesorten. Gruppe II soll Vitamin C, aber auch Abwechslung bieten. Bei groesseren Mengen der Gruppen I oder III, tritt die Bedeutung der Gruppe II zurueck. Bei betraechtlichem Genuss von Lebensmitteln der Gruppen I und VI (Protein und andere Naehrstoffe) ist Gruppe V weniger notwendig. Reichliche Versorgung mit Gruppe I setzt Bedarf an Gruppe VII herab - wenn von deren Bedeutung als Kalorientraeger beziehungsweise Hilfsmittel zur Schmackhaftigkeit abgesehen wird.
Die empfohlenen Mengen betragen:Gruppe I taeglich 1-2 Portionen Gruppe II taeglich 1-2 Portionen, Gruppe III taeglich mindestens 2 P. Gruppe IV zu jeder Mahlzeit etwas, Gruppe V taeglich 1-2 P. Gruppe VI taeglich ¼ bis ½ ltr. Gruppe VII zu jeder Mahlzeit etwas. Diese Mengen sollen zur Bereitstellung aller Nahrstoffe reichen - ohne Beruecksichtigung der Kalorienzahl. Die uebrige Mahlzeit mag aus beliebigen Nahrungsmitteln bestehen, selbst wenn der Naehrwert durch Veredelung so weit herabgesunken ist, dass ihr Hauptwert im Energie - od. Kaloriengehalt, sowie in der Befriedigung des Genussinnes besteht (z.B. Weissbrot oder - mehl, Staerkemehle , Teigwaren, die Zuckerarten usw.)

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NUTRITION MISSION FOR THE OFFICE OF THE SURGEON GENERAL
APO 807

April 19, 1950

SUBJECT: Nutrition Mission - Pilot Study of German Nutrition Data.

TO : Chief of Research and Development Board
Attention: Colonel W. S. Stone, M.C.

I. DISCUSSION

1. The major source of original material on nutrition surveys in Germany consists of the results of the German Nutrition Survey Teams from 1946-1949. A Pilot Study was begun August 10, 1949 to study the data and gain experience in coding which would form the basis of recommendations as to how the data should be treated.

2. A Progress Report of the study of the Stuttgart data for April 1947-1948-1949 was presented to the Nutrition Consultants, SCO, October 11, 1949, with recommendations that the Pilot Study be completed in Germany. The Nutrition Consultants recommended such action within the present allocation of funds and the orders of the Nutrition Mission were extended six months.

3. The Pilot Study is completed and attached. It contains a discussion of the findings and recommendations. Special consideration should be given to the section on deviation from standard weight and particularly the data basic to Graph XIV and Table XXXVI before a decision is made with regard to the distribution of this report. These data indicate that the degree of underweight of children in Germany was less serious than earlier reports have indicated.

4. Certain observations and recommendations are made in this letter and in Miss Hopwood's summary report, attached, which are not included in the Pilot Study. These include suggested procedures for surveys in the event of an early emergency.

5. While this study indicates that no further statistical analysis of the German Nutrition Team data is warranted it has a positive value in that it has indicated some of the reasons for the inadequacies of the present data and lays the basis for further research

and planning. For this reason alone it justifies the expense and effort that has gone into it.

II. PILOT STUDY

1. The Pilot Study of German Nutrition Team data covers the nearest month to April for which data are available for 1946-1949 and includes Frankfurt-Wiesbaden, Stuttgart, Nurnberg and Berlin.

2. The results of the Pilot Study indicate that:

(a) A further statistical analysis of the original data characteristic of the Pilot Study is not justified.

(b) Conclusions drawn from the German nutrition team data with regard to nutritive conditions in Germany during the period under study are subject to considerable error. This statement does not invalidate the broad conclusions drawn at the time the data were collected nor those which may be derived from a compilation of the existing average data in the Nutrition Mission files.

(c) No consistent relationship exists between nutritional status of the people within a ration category and the food allowance of that category. (Section D, Sample)

3. The observations in paragraph 2(c) indicate that further consideration be given to:

(a) The significance of observations or inferences as to the adequacy of the allowances for a particular ration category, such as normal consumer or heavy worker.

(b) The value of a large number of ration categories in a rationing program.

(c) The relation between psychological reactions to the ration system or an existing food situation, the assurance of the issue of the ration and the physiological adequacy of the ration.

4. Data on weights for height, age, and sex of a suitable sample of a population are a useful first index of the nutritional status of a population in times of stress. Weights must be compared with a proper standard to prevent the release of data indicating underweight which would lead to wrong conclusions and disturbing reactions in the population.

PILOT STUDY (Continued)

5. The attached memorandum contains the observations and recommendations of the Statistician based on her experience with the Pilot Study.

III. RECOMMENDATIONS

It is recommended that:

1. No further work be undertaken on the statistical analysis of original German Nutrition Team data.

2. The results of the Pilot Study be combined with the existing average data on Germany for a final analysis of the nutritional status of Germany in relation to ration category and availability of food.

3. The experiences and findings of the nutrition surveys carried on in Japan since 1945 be considered when drawing general conclusions with regard to rationing and survey procedures. These surveys followed somewhat different procedures and controls and provide data on a rationed population four times that of the U. S. Zone of Germany, with different dietary habits and psychology.

4. The Section on deviation from standard weight of pre-adolescent children derived from the tables on weight and height, used in nutrition surveys in Germany, be reviewed before the report is given general circulation.

5. Plans be reviewed, studied and developed for:

(a) Nutrition Survey Teams, their organization, composition, equipment and operation.

(b) Methods of sampling populations, and conducting nutrition surveys in different ethnic communities. These procedures should be applicable to various levels of operation and provide data suitable both for immediate appraisal and for subsequent analysis.

Enclosures:

Paul E. Howe
Chief
Nutrition Mission

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NUTRITION MISSION FOR THE OFFICE OF THE SURGEON GENERAL

SUMMARY REPORT

The following summary, observations and recommendations are based on my work on the Pilot Study of the German Nutrition Team data.

1. Deviations from Standard Weight

The Public Health Office of OMGUS throughout the occupation based its statements of the degree of underweight of the German people as a "Percent Deviation from Standard Weight". From these figures it appears that the people were very much underweight. However, while the Mission was in Germany it did some work on some excellent data that had been collected by the Stuttgart public schools over a period of years. When these data were compared with the "Standard Weight Tables" used by the nutrition teams the German children were shown to have been underweight in 1938, the year named by the German doctors queried as Germany's best year as far as food and general conditions were concerned. A comparison of the 1938, and the 1947 curves for children enrolled in the Stuttgart public schools leads to an entirely different conclusion from that when the 1947 curve is compared with the standard weight curve. The percentage of underweight as shown by the graph appears quite alarming but the comparison of the two curves changes the picture. It is believed that the latter difference more nearly represents the amount of underweight caused by the shortage of food after the war. Unfortunately, data are not available for a similar comparison for adults.

There is no question of the accuracy of the work of the OMGUS nutrition officers. The facts concerning the standards used and the value of the data as reported could not have been ascertained unless a larger staff had been available for supervision and research. However, it is of the utmost importance that whenever work of a similar nature is undertaken deviations from normal weight be based on established standards for the country.

2. Recommendations

The recommendations that follow are divided into: (A) recommendations for further research and (B) recommendations for nutrition team procedures in case of an early emergency.

4. That any funds available for research be spent for fundamental research directed along the following lines:

(1) To devise a set of "Standard Weight" tables that adequately represent the relationship of weight to height. The Stuttgart school data, as far as studied indicates that as height increases weight does not increase in the same proportion. Fundamental research on the relation of height to weight and on means of measuring it might well take bone structure into consideration. Possibly a formula could be developed that would measure the inter-relationship of these three factors.

(2) To determine to what extent the quest of food by a population in distress is due to physiological causes and to what is due to hunger caused by psychological insecurity.

The dietary histories as collected in Germany proved inadequate for analysis. The people were hungry and food was an obsession. The main occupation of many people was the collection of food from any available source to add to their official ration. The tables on called-up rations show fewer calories than the official ration as published. It was often impossible to make the official ration available in a given community on a given date because of poor transportation and other factors. This fact added to the psychological insecurity of the population. It might have been better to issue as the official ration only the amount of food that was certainly available and to issue extra food as a supplement wherever possible. This would tend to make the question of food a positive psychological factor rather than a negative one. Methods of food distribution should be developed that rule out psychological insecurity as far as possible. Monotony in the diet and its effect on craving for food should also be considered. This question was not investigated in relation to the Nutrition Team data. It is being raised here because of the behavior of the German people, which I observed during active work with them for Public Opinion Surveys, from the winter of 1947 until currency reform in June 1948.

(3) To develop a chemical or mechanical means of detecting symptoms of nutritional deficiencies.

The clinical histories as recorded show clinician bias. The clinicians were all trained doctors but their observations lack consistency, and appear to be unreliable. Objective tests should be developed where possible.

B. Nutrition team procedures which could presently be used in an emergency to determine the nutritional status of a population under stress:

(1) The Sample - The sample of the population studied should be so designed that it can be divided into these sections:

(a) A controlled street weighing program in which the sample for each community included would be based on a quota sample (age and sex) for that community. The total sample for the separate communities would be representative of the minor civil divisions. Places of weighing should be selected to insure a representative sample of the community, excluding people from outlying districts.

(b) A school weighing program in which the sample would be made up of representative schools within the various districts and the same schools would be examined at intervals within a given time period. The children would be weighed and measured recording sex and age.

(c) Panel groups set up within various districts, for example in factories, an area sample, etc., where the population would be fairly stable. The panels would be used as control groups. The information from this segment of the sample would give data on homogenous segments of the population.

(d) If children below school age are to be examined child health clinics should be used. However, the Pilot Study indicates that shortages affect this segment of the population less than the other age groups within the population.

(e) The sample should be so designed that it is based on a given period of time, probably a quarter-year basis. This gives the nutrition teams more time to collect information and would permit a larger population sample, thereby increasing its reliability. However, the basic sample plan should specify the time period each community or panel is to be examined; for example, if community A is examined the first week of a given quarter it should always be examined the first week of a given quarter. A sample designed in this way, if properly controlled, would permit the information to be analyzed by sex, age, for a given community, for a group of communities based on city size and for a given civil division.

(2) Dietary Histories and Clinical Examinations: Dietary histories and clinical examinations would be conducted on the panel groups only. This method would have the following advantages:

(a) Information would be collected on the same person over a period of time and would probably give a better picture of physiological changes due to the increase or decrease of the food supply.

(b) The examining doctor would be able to verify his observations and recheck them, which would help to eliminate clinician bias. In case of change in medical personnel clinician bias could be determined more accurately.

(c) The dietitian would build up better rapport with the individuals examined over a period of time and might secure better dietary histories and encourage people to keep dietary diaries.

(d) Complete records for the same group of people would be available and the inter-correlations of the various factors could be studied.

(3) Recording and Processing of Data:

(a) Forms for recording the data be so designed that the laboratory data is entered on the same form as the clinical data, and the dietary history attached. If the panel method is used a cumulative record could be kept for each individual and all examinations recorded on it. The standard form should be used for all civil divisions and all doctors should examine for the same symptoms. The form should be pre-coded for direct processing to IBM cards. Unless the forms are consistent and chemical laboratory and dietary histories properly integrated and matched the transfer to IBM cards is difficult and subject to error; the cost of coding and punching is also markedly increased.

(b) Analysis of data collected should be undertaken as soon as possible for these reasons:

(1) If the sample is found to be inadequate or not representative it could be redesigned immediately in order to correct such inaccuracies.

(2) The analysis of clinical and dietary data could be used in an educational program for the teams in order to eliminate clinician bias as much as possible.

(c) All material should be studied as nearly as possible against existing data for the same population or against a standard weight. Furthermore, the degree of underweight should be stated both as "Percent Deviation from Standard Weight" and as "Percentage Deviation from Previous Weight".

(d) Weapons carriers, ambulances or comparable vehicles might be designed for use as weighing stations for the school weighing and street weighing programs and for the panel groups. This would have the advantage that accurate scales would be available; people would be out of the cold, would not be afraid of losing their possessions, etc.

/s/ Louise Hopwood,

Louise Hopwood, Statistician
Nutrition Mission

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P. V. Cardon, Administrator, Agricultural Research Administration
Paul E. Howe, Nutrition Consultant, Animal Husbandry Division, and Chief, Nutrition Mission for the Office of the Surgeon General

August 16, 1950

Collection of Data on Nutrition Surveys in Germany

Colonel W. S. Stone, Chief Research and Development Board, has inquired as to when the project on collection of data from nutrition surveys in Germany can be closed.

The available data and records have been collected and brought to the United States. They are now in the hands of the Historical Division, Office of the Surgeon General, Department of the Army. The opening of the boxes and their arrangement of the contents in files is awaiting the delivery of filing cases to the Historical Division. When the filing cases are ready we will supervise the transfer and checking of the records.

The financial phase of the project (Department of Agriculture appropriation 1295936(62).011) can be closed as soon as all bills are in and the account placed on a cash basis.

The following letter to the Department of the Army is suggested:

"The Agricultural Research Administration, Department of Agriculture, contracted with the Research and Development Board, Office of the Surgeon General, Department of the Army (Letter, F. H. Spencer, Acting Research Administrator, Agricultural Research Administration, U.S.D.A., to Colonel W. S. Stone, Chairman, Medical Research and Development Board, Department of the Army, Washington 25, D. C., 8 May 1949, relating to "collection of data in Western Europe pertaining to the nutritional status of the population during and after the last war"). to collect in Germany and return to the United States the data obtained by U.S. Army and German Nutrition Survey Teams, together with available data on nutrition during and following the war in Western Europe. The data have been collected and deposited with the Historical Division, Office of the Surgeon General. In addition, the Nutrition Mission sent by this office was able, through the excellent cooperation and assistance from the Office of Military Government, U.S. and High Commissioner of Germany, to make a pilot study of typical data and thus contribute to the ~~record~~ phase of the original project discussed with us.

"A summary of the work of the Nutrition Mission is attached. Copies of the "Pilot Study of Nutrition Data, Germany," and a covering letter to the Chief, Research and Development Board, Department of the Army, with recommendations and suggestions for further work were sent to you, 9 April 1950, by the Chief of the Mission. The boxes

of files and data have not been opened because the Historical Division preferred to wait until suitable filing cases were available. When the filing cases are delivered or whenever you wish Dr. Paul E. Howe, Chief of the Nutrition Mission, will assist in arranging the files.

"The project is, therefore, in effect completed, with the exception of closing the financial account. The financial phase of the project will be closed as soon as all bills are in and the account can be placed on a cash basis.

"As far as we are concerned, the project has been more than a technical service si since the material is a useful background to our work."

A signed copy of the Pilot Study and the accompanying letter of 19 April 1950 to Colonel Stone are attached. A copy of the Pilot Study has been furnished the Bureau of Human Nutrition and Home Economics with a request for their evaluation.

Attachments

REPORT OF NUTRITION MISSION FOR THE OFFICE OF THE SURGEON GENERAL

The Agricultural Research Administration, U. S. Department of Agriculture contracted with the Research and Development Board, Office of the Surgeon General, Department of the Army, to undertake to collect the data obtained by the U. S. Army and German Nutrition Teams in Germany following World War II, to assemble them in the United States and to draw up plans for analysis (Letter, B. T. Shaw, Deputy Research Administrator, U.S.D.A. to Chairman, Medical Research and Development Board, Office of the Surgeon General, 8 March 1949 and reply Colonel W. S. Stone, Chairman, Medical Research and Development Board to B. T. Shaw, U.S.D.A., 8 March 1949). This was a subdivision of the original proposal to collect the original material and statistically evaluate it and prepare it for publication. The second half as proposed was to perform the analysis of the assembled data and prepare the first report.

Dr. Paul E. Howe, Chief, Mr. Frank J. Longen, Administrative Assistant, and Mrs. Paul E. Howe, Special Assistant, were sent as the Nutrition Mission for the Office of the Surgeon General to Germany on 14 May 1949 for a six-month period. They were given invitational orders (letter, AGAO-C 200.4 (9 May 1949) MEDDH, dated 12 May 1949, Subject "Invitational Travel Orders", IJ-Frankfurt, German-MK) and attached upon arrival to the Public Branch, Civil Affairs Division, OMGUS for logistic support and later during the extension of duty for six months (Letter ACAO 200.4 (18 October 1949), Subject: Amendment to Invitational Travel Orders, IJ-Frankfurt, Germany-MK) to the Public Health and Welfare Branch, Education and Cultural Relations Division, HICOG.

As the result of conferences with Public Health officers responsible for nutrition surveys, with the German officials who conducted the nutrition survey from 1946-1949 and reviewing the data available it became apparent that a pilot study of the German data was both desirable and necessary.

A preliminary study was sent to the Research and Development Board, SGO, on 30 June 1949, Subject "Nutritional Surveys - material presently available and proposal for analyses," indicating the German data could best be coded in Germany, requesting funds to support a pilot study of the data in Stuttgart for the months of April 1947, 1948, 1949 and that the pilot study be amplified to include other cities. The preliminary study was possible because of the availability of Miss Louise Hopwood, statistician, Public Health, OMGUS and the assignment of German employees by the Land Director, Wurtemburg-Baden, to code the data. Miss Hopwood was subsequently transferred to the Medical Division, EUCOM and assigned for work with the Mission on a reimbursement basis from 1 July 1949 to 1 April 1950.

On 11 October 1949 the Chief of the Mission returned to the United States (Cable SG, to COMGENHEMP WLC 43685, 22 September 1949) and presented the preliminary report of the Pilot Study at a meeting of the Nutrition Consultants, Office of the Surgeon General. The following recommendations were made; that the Pilot Study be completed, that there were sufficient funds available to do it and that the return of the German Nutrition Team data was not justified. The recommendation of the Nutrition Consultants was that the Pilot Study be completed within the funds available; and that data on heights and weights of Stuttgart school children be coded. The orders of the Mission were, therefore, extended and also the invitational orders of the Department of the Army were extended for six months.

The Pilot Study of the German Nutrition Team data available nearest to April for the years 1946, 1947, 1948 and 1949 for Stuttgart, Nuremberg, Frankfurt-Wiesbaden and two Bezirks in Berlin were coded and analyzed. The report on this Pilot Study was forwarded to the Research and Development Branch, SGO, on 19 April 1950 with a covering letter. The report and the covering letter contain the recommendations of the Mission with regard to further statistical analysis of the original data.

In addition to the nutrition survey the heights and weights of Stuttgart school children, having continuous data from 8 to 13 years of age or more, were coded for the children born in 1909, 1914, 1919, and 1924. Cards were punched for those born in 1909, 1914, 1924 and preliminary tabulations made by the 7771 St. Document Center, Berlin. The coding was possible because of assistance rendered by the Public Health and Welfare Branch, E and CR, HICOG, a grant-in-aide project, Maternal and Child Welfare Services, HICOG to the Public Health and Welfare Branch, Office of the Commissioner, Wurtemberg-Baden. This grant was to foster technical relations between the members of the Mission and German Public Health Officials and to assist the Public Health Officers of Stuttgart in planning their school weighing program and analysis of their data. The Mission and particularly the statistician have contributed to this objective through conferences and the analysis of the data. The analysis is only begun. Its completion will depend upon additional funds or special arrangement with an interested agency. The work on school weight data is in effect a joint project between the Mission and HICOG.

In addition to the material outlined above the Mission has accomplished the following in relation to the specific suggestions given it by the Nutrition Consultants.

(a) Data obtained by U. S. Survey Teams 1945-1946:

1. The major portion of the original records of the data obtained by U.S. Survey Teams has not been found. Inquiries were extended and repeated where it seemed probable the records might have been located.

2. The original clinical records of nutrition surveys conducted in Bavaria, May to June 1945 were found in an attic at Headquarters in Berlin among papers belonging to another Division than Public Health. They are deposited with the Historical Division, SGO. No biochemical or dietary records accompanied them.

3, A summary of nutrition surveys conducted under the supervision of the 12th Army group is contained in the Report of Operations - 12th Army Group, Vol. XIII and surveys listed in Vol. VII. Copies are in the Historical Division, SGO.

4. Summary reports since July 1945 are contained in the files of the Public Health Branch, OMGUS, and some in the files borrowed from the Public Health Office, Hesse.

(b) Street weighing data and weights of children:

The summaries of the average data on street weights and school weights are contained in the files of the Public Health Branch, OMGUS. The nature of the original data and problems of analysis are discussed in the Pilot Study, Section VII, for Street Weights, and Section VIII, for School Weights.

(c) Data from Laboratory at Hoechst:

1. One copy of the "Final Report of Army Nutrition Laboratory Hoechst" is in the files.

2. Original laboratory data were obtained from Lieutenant Rabe, in charge of the Laboratory and deposited in the Historical Division, SGO. (Letter, 2 November 1949, Major C. J. Koehn, SGO to Chief Nutrition Mission).

(d) Data obtained by German Nutrition Teams, June 1946-1949:

1. The data available (this includes most of the data assembled), collected by the German Nutrition Teams have been borrowed, assembled, indexed, brought to the United States and deposited with the Historical Division, SGO. These data are to be returned to the Land Offices as indicated in a letter to Chief Historical Division, Office of the Surgeon General, 25 April 1950.
2. Index of data filed with Historical Division, SGO.
3. Nutrition Team summary reports in files of Public Health Branch, OMGUS.

(e) Special surveys and studies:

1. Summary report of special surveys are contained in the files of the Public Health Branch, OMGUS, and Public Health Office, Military Government, Hesse.
2. Summaries of the work on coal miners have been obtained from the Combined Coal Board and Dr. Lehman, Kaiser Wilhelm Institut fuer Arbeitsphysiologie, Dortmund, but no original data are included.

(f) Survey findings of UNRRA Teams:

1. Summaries of weight data, without height, obtained by UNRRA teams are in the Public Health Office, Hesse files.
2. The summary reports of UNRRA surveys are in the inactive UNRRA files at Lake Success.
3. IRO has been asked to prepare a statement of the problems of operation of messing facilities in displaced persons camps. With considerable difficulties IRO has solved some of the administrative and operational problems which should be a matter of record. The report is to be sent to the Historical Division.

(g) Data on nutritional status, food, and vital statistics have been obtained from England, Holland, Denmark, Belgium, and France. The World Health Organization did not have information. In most cases the reports are summaries of the experiences during the war, or occupation, often after correction of the statistical data supplied while occupied and form a background of material for consideration of emergency problems.

Specific assistance has been rendered the Mission as follows:

Public Health Branch, CA Division, OMGUS, and E and CR Division, HICOG, to wnich the Mission was attached, for logistic support, and assignment of Major Robert Ryer,III, and Louise Hopwood, statistician; Public Health Offices, OMGUS and HICOG in Wurtemberg-Baden, Hesse, Bavaria, and Berlin.

Medical Division, EUCOM and particularly Major R. C. Miller, in making available the services of Miss Louise Hopwood, who ably carried out the statistical work.

Machine Record Unit, Quartermaster Depot, Giessen, which punched IBM cards and made its machines available to Miss Hopwood for tabulation of data.

Machine Record Unit, 7771 St. Document Center, APO 742, which punched cards and tabulated data even after the Mission left Germany.

AG Publications Depot, APO 757, for photostating and microfilming of documents.

Naval Technical Section (Medical), APO 403, Heidelberg for translations, microfilms, obtaining German literature and charting graphs.

66 CIC Detachment, APO 154, U.S. Army, Germany, for microfilming of data.

Mrs. Paul E. Howe, assigned as Special Assistant to the Chief of the Mission, has acted as editor for the Pilot Studies and reports, as well as prepared her own reports of conferences.

The accomplishments of the Mission and the Pilot Study were only possible because of the generous assistance which has been given by all with whom it has come in contact or asked for help.

The records assembled in Germany and other countries have been deposited in the Historical Division of your office, either directly by us or forwarded to that Division previous to the return of the Mission to the United States by individuals or the Agricultural Attache's of the various Embassies.

The records of the clinical examinations, biochemical analysis and dietary records have been borrowed from the Public Health Offices of the various Lander with the understanding, in writing, that they will be returned. Should there be a considerable delay in returning the records it is suggested that the various offices be informed of the delay.

The records of the clinical examinations, biochemical analyses and dietary histories have been assembled by date and time of survey, and cards prepared indicating the material available.

The files on nutrition have been borrowed from the OMG wherever possible and receipt given. These files constitute a part of the records placed in the Historical Division. They duplicate, in part, those in the Nutrition files of Public Health Branch, OMGUS, in other cases, especially those from Hesse, they contain the original data from which the reports to OMGUS were prepared.

The work of the Mission has included a statistical pilot study of German data from four cities in addition to the collection of material covered by the contract between the Department of the Army and the Department of Agriculture. The findings of this study, in the opinion of the Mission suggest that further statistical analysis of the German Nutrition Team data is not warranted. The pilot study is in effect a plan for analysis of the data. Certain conclusions and recommendations were presented in the Pilot Study and in the covering letter to the Chief of Research and Development Board, (Letter, Chief Nutrition Mission, to Chief Research and Development Board, Attention: Colonel W. S. Stonce, M.C., April 19, 1950, Subject: "Nutrition Mission - Pilot Study of German Nutrition Team Data.")

The remaining work contemplated in the original proposal is the final analysis of the records and data and the preparation of a paper or papers on the conclusions that may be drawn from the experiences of the German people living on the food supplies available from 1945 to 1949.

The additional work of the Mission was only possible as the result of the assistance and logistic support indicated above.

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Nutrition Accounting for Large Groups

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WHEN any organization undertakes to provide food for a group of persons, it assumes responsibility for the nutritional adequacy of the diet it furnishes. People fed in such groups have comparatively little direct control or choice over the food placed before them. They are entitled to receive an adequate diet within the budgetary level. Some people fed in groups can supplement their diets from outside sources; others, such as inmates of old people's and children's homes, mental hospitals, and penal institutions, have no such opportunities.

Even when a good diet is provided, failure to eat all of the food or to make proper selections from among the foods available may result in an inadequate intake. It is usually possible to obtain better acceptance of the diet by giving attention to the food habits of the group as well as to better preparation and service of the food itself, while still keeping within the budgetary allowance. If any considerable outside supplementation of the diet is practiced, it indicates that the supplying agency has failed to meet its responsibilities.

In the management of funds it is customary to require meticulous records and accounting for money expenditures. When money is appropriated or otherwise made available to feed people, it is equally important to have an accounting of the food supplied and used, as evidence of proper expenditure of funds to provide an adequate diet. Such nutrition accounting is possible with our present knowledge of the composition of foods and of the major contributions made by the various classes of food to the nutritive requirements of people. It is applicable to any given set of food habits and permits a ready interpretation of the diet provided in terms of its adequacy.

The records necessary for nutrition accounting should contain the quantities, weight, or volume, of all foods supplied and the number of persons fed during the period of accounting. They should also include the amount of waste whenever possible, although some progress in the operation of an institution can be attained without data on waste. Nutrition accounting automatically leads to greater attention to detail, and usually the waste is soon differentiated into that involving edible and non-edible food.

GROUPING OF FOODS SIMPLIFIES ACCOUNTING

The report, review, and analysis of the records are simplified by grouping together foods of approximately the same nutritive value, such as meats, leafy green and yellow vegetables, and grains and grain products, and reporting the weight of each group or subgroup of food used. Subgroups are desirable when a particular food or group of foods is used in large quantities or has a marked effect upon the nutritive value of the diet, such as potatoes in relation to other vegetables, or tomatoes and citrus fruits for ascorbic acid. Subgroups may vary according to regional differences, special dietary habits, or costs. For example, spaghetti and rice might be put in a subgroup because if used too often, they create monotony. The grouping of foods has the further advantage of reducing the number of items to be reported. It also takes into account the practical fact that nutrients may be obtained from any of a number of different foods within a group, even though the number of foods served at a meal and in a given day is limited.

The report of the number of persons served is usually expressed in man-days of three meals per person and includes all persons served food. When there are occasional guests, extra meals, or absences, the total man-days may be determined by recording the total meals eaten, divided by the number of meals served in a day.

Records of the amount of food used, reduced to a man-day basis, can be used for a rapid analysis of the probable adequacy of the diet. A more careful analysis may be made by using tables of food composition to calculate the amount of nutrients in each food or in groups of foods. The advantage of tables of composition of food groups lies in the fact that people's food habits and food patterns are relatively constant, while there are variations in the quantities of individual foods that occur in a group within a season or in geographic regions. The weighted average for food groups used by the U. S. Army and weights of food in various containers are contained in Army Technical Manual 8-501 (1). The composition of food groups should be weighted according to the proportion of foods within a class commonly used in a

given institution in a region or a season. The use of tables of composition of food groups applied to the weights of classes of food used in a particular day simplifies calculations and also represents the approximate composition of the dietary that may be expected throughout the year.

THE RATION

A ration or food allowance in terms of foods used in large amounts and food groups is invaluable in planning and adjusting the adequacy of food supplied in the operation of an institution. Before establishing a ration for an institution, or modifying one in existence, it is important to determine the per capita food pattern or quantities of food in use and characteristic of the institution. Such a pattern may be obtained by tabulating from the accounts of the institution the quantities of food used in three or four typical months of a year. The food pattern is then adjusted with regard to nutritional adequacy in relation to money available.

The ration has a variety of uses. It becomes a measuring stick in planning requirements, purchases, farm activities, the money required, food control, and in analyzing approximate nutritive value, cost, and improper expenditures. An established ration when used to arrive at the cost, or estimated cost, for each of the food groups, and when the financial account is similarly subdivided, becomes a useful tool. Comparison of the quantities of the various food groups used and their cost with the ration groups and their estimated cost, makes it possible to determine whether a high cost in a particular period is due to excessive use of one group, such as meat, or the normal or even lower use of foods of higher quality or cost within a group.

In Table 1 is an extract from the accounts for 1937 of a penal institution which illustrates a nutrition account and the classification of foods found to be desirable for such an institution. It also gives amounts of food in the ration at that time and an estimated cost. The latter is used to approximate the money value of the ration at a given time for use in comparing the financial accounts and variations in food costs.

FOOD PATTERNS IN EACH INSTITUTION

Experience with nutrition accounting has shown that a given institution or Army mess tends to follow its own general food pattern. There may be variations from season to season, cook to cook, or administrator to administrator. In general, however, the pattern remains fairly consistent, so much so that any marked change shown in the distribution of food is significant and points to some alteration in conditions that warrants investigation.

This tendency toward a characteristic food pattern increases the significance of variations in the amount of food used per capita per day. Once the nutritive value of the food pattern is known, the effect of

TABLE 1

Extracts from the accounts for 1937 of a penal institution showing the use of a nutrition account and the classification of foods

FOOD CONSUMED PER MAN			RATION PER MAN		
Item	Amount	Cost* per day	Item	Amount	Estimated cost per day†
	lb./day			*lb./day*	
Meats, fish	0.738	$0.079	Beef	0.75‡	$0.071
Lard, oils	0.096	.014	Margarine	0.15	0.019
Butter, margarine	0.054	0.007			
Grain products	0.755	0.027	Flour	0.80	0.018
Spaghetti, rice, etc.	0.028	0.002			
Dairy products	1.078	0.027	Milk, fresh	1.00	0.020
Eggs	0.035	0.007	Eggs	0.03	0.006
Legumes, dried	0.031		Beans, navy	0.10	0.007
Sugar, sirups	0.249	0.012	Sugar, granulated	0.25	0.012
Potatoes	0.492	0.007	Potatoes	1.00	0.015
Roots, other vegetables	0.195	0.003			
Leafy green and yellow vegetables	0.902	0.022	Cabbage	0.60	0.005
Tomatoes, citrus fruits	0.378	0.009			
Other fruits	0.525	0.017	Apples	0.15	0.003
Dried fruits	0.042	0.003	Prunes	0.08	0.003
Food adjuncts	0.023	0.003	Yeast	0.015	0.0002
Spices, etc.	0.081	0.004	Salt	0.10	0.0014
Beverages	0.103	0.013	Coffee	0.10	0.013

* Much food was produced on the farm; prices reflect the reduced cost.

† Based on ration allowance and cost of food item used in greatest amount. Experience had shown that in practice the total is approximately correct to within ± 5 per cent, but +10 per cent is allowed in evaluating reasonable expenditures.

‡ At present this has been reduced to 0.6 lb.

variations—for example, a decrease in one group or subgroup—can be evaluated. It is first necessary to note any compensating variation in other food groups that supply the nutrients the first group has hitherto furnished in important amounts. If satisfactory adjustments have not occurred, it is obvious that a suitable correction in the diet must be made to insure an adequate diet.

There may be some question as to the accuracy or significance of the data on food consumption obtained from kitchen or store room records. We have found, however, that it is possible to detect gross deviations from actual food consumption through a comparison of the nutrition accounts over a period of months or weeks. Clues to such deviations are marked variations from the food pattern or in quantities of food consumed in relation to (a) the group's actual capacity to eat, (b) the season, or (c) probable likes and dislikes of the inmates for certain foods in an institution.

A nutrition account provides factual evidence which is subject to review in detail, and hence, it is the first step in nutritional improvement or administrative control. It provides information on the quantities of food used, something which is not provided by the menu. The menu is the cook's work sheet and often is concerned with mixtures of food, and usually provides little information on quantities of the food groups used.

NUTRITION ACCOUNTS IN USE

Nutrition accounting, in addition to its value as evidence of the nutritional adequacy of the diet, is an administrative tool. It has been successfully used in this way in the Bureau of Prisons, U. S. Department of Justice, and in state institutions (2–5). In the former case the nutrition account was used to check on the success of the operations when a standard food ration was introduced as the basis of feeding in place of the cost of food per meal or per day. Messing operations were maintained on this basis in federal prisons in widely different parts of the country at an improved and satisfactory nutrition level with increased satisfaction to the inmates and at a considerable saving in money. Nutrition accounts have the added advantage of offering impersonal evidence as to mess operations of a particular institution in case of complaints of its food service. Through them, too, the average food pattern of an institution is shown. However, if the population of an institution is mixed with regard to age, sex, or degree of activity, it is necessary to determine a weighted average requirement with which to compare the data on food actually used.

HOSPITAL NUTRITION ACCOUNTING

There are conditions under which it is desirable for both administrative and nutrition purposes to keep separate nutrition accounts within an institution. Such cases include large institutions where a considerable number of individuals are served in separate dining rooms operated at different levels of acceptability, quantity of food required, or costs. This is especially true in institutions and hospitals where the staff, as part of its compensation, receives more desirable or expensive meals than the inmates, patients, or servants.

Hospitals present a special problem because a large proportion of the patients receive special diets. Nutrition accounting is of more value in relation to the administration of hospitals than to the nutritional status of the average patient. Tuberculosis hospitals and those in which records of certain wards are kept might be an exception. Nutrition accounts in hospitals are useful in relation to the overall operations and are indicative of reasonable care or of extreme waste of food. The food patterns of hospitals, as of other institutions, tend to be fairly constant (6) over a period of time.

Marked deviations in the usual pattern are, therefore, significant and worth checking. Quantitative food patterns for use in evaluating nutrition accounts of hospitals should be based on experience and should be sufficiently liberal to permit the physician a reasonable latitude in prescribing diets. Where the quantities of food used exceed such limits, an examination of the number and type of patients in the hospital and their diets will disclose the presence or absence of a special problem.

SUMMARY

The state, governmental, or private agency that supplies food to groups of people assumes responsibility for the adequacy of the diet furnished. Nutrition accounts which show the quantities of groups of food of similar nutritive value or of special dietary importance and the money expended for them on a per capita basis are useful aids in appraising the adequacy of the diets supplied as well as the wise expenditure of money allocated for food. They often lead to savings in the cost of feeding as well as assurance that an adequate diet is provided for the inmates of the institution involved.

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meeting of
Wardens Assn.
the US.
Atlantic City
Oct 5.

Nutrition Accounting - An Administrative Device

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Within the past year I have answered questions from all parts of the country with regard to rations, food allowances, food controls and nutrition accounting in public institutions. This general concern is understandable because of the increase in cost of living and the public interest in food and nutrition. Mr. J. V. Bennett of the Bureau of Prisons suggested that we discuss the subject at a meeting of the Warden's Association. The understanding was that this should be a workshop and your officers were willing. While my interest in mass nutrition began in the Army in World War I and continued between and through World War II, my experience in relation to penal institutions originated with the Bureau of Prisons in 1929. Mr. Sanford Bates and Austin MacCormick wanted to do something about food in their institutions. The Bureau of Prisons in 1931 originated and was the first agency to adopt in 1931 and use nutrition accounting as a routine procedure.

I have found the basic problems of food in foreign penal institutions to be universal. They are the same in all types of institutions in many parts of the world. In 1946 I saw that the work of the Bureau of Prisons had percolated to a boys' school in Peking, China.

My experience last year in reviewing the policies and practices of the State of California in feeding the wards of the State provided additional evidence that it is possible to operate an administrative food control that will assure and account for nutritionally adequate diets at a reasonable cost from which satisfactory meals may be prepared. California goes farther and utilizes the food control as a basis for the

preparation ~~the food control~~ of the budget, through the kitchen and dining room to the final cost and nutrition accounting. With due credit to the culinary personnel who make any program of feeding people successful, the accomplishments of the food control system in penal institutions in California have been the result of the interest of the Directors of the Department of Finance and Director of the Department of Corrections, Richard A. McGee. In this work they had the skill, vision and persistent effort of the Food Administrator Mrs. Jane Sedgwick Pirkey.

Considerable material has been published on various phases of the administrative problems of mass feeding. A list is appended including some that contain data that will be useful to you. Today I would like to review the philosophy, background, and method of operation of nutrition accounting for your consideration and discussion. You must bear in mind that nutrition accounting and food control are but aides which must be adapted to particular situations. They are not arbitrary cure-alls.

Food, in its preparation and service, is a major responsibility in caring for people. Food itself is an important factor in the preparation of the institution's budgets, it is a daily element in the operation of the store room, one justification for the farm or garden, the continuing responsibility of the culinary department with a deadline to be met three times a day, a detail of the accounting department and a concern of the public and the administration. Because the preparation and service of food determine its acceptability the competence, skill, integrity, imagination, and ingenuity of the staff determine the success of the feeding operation.

Assurance that the diet supplied in an institution is nutritionally adequate, is properly expected by the public. It is possible to obtain an adequate diet with many different combinations of food. It is also possible to be well fed on a simple well prepared diet and inadequately fed on a varied and complex one. The success with simple diets results from variety in mode of preparation, the introduction of the unexpected and even by evidence of the personal interest of the administration.

The science of food and nutrition has advanced to the point where it is possible to evaluate the diet as a whole and to determine whether or not it meets established nutritional allowances. This is important because the administration can examine its food usage objectively and is freed from dependence upon the presence or absence of any particular food or group of foods which may traditionally have been believed to be necessary. Certain types or groups of food are recognized as important sources of particular nutrients but it is equally true that we are not dependent on any one food to supply them. The quantity of a food consumed is as important as its composition. This is true because it is possible to obtain the required nutrients through the use of large amounts of a few foods relatively low in a particular nutrient. Conversely it is possible to correct inadequacies of a diet through the use of concentrates of pure nutrients, such as vitamins or minerals, especially when they can be added to an otherwise acceptable diet and are economical.

People in different parts of the world are adequately fed with widely different kinds and quantities of food. Food patterns vary the world over. What is true of peoples is equally true of institutions. In my experience institutions follow their own characteristic food patterns rather closely

but differ one from another. These patterns are related to the area from which the wards come, the foods available in the region and their cost, the experience and capability of the administrative and culinary staffs and the equipment and facilities available for preparation and service of food. Because of these differences it is not fair to judge the diet of an institution from a meal or food pattern that does not conform to or agree with ones own. It is necessary to have some knowledge of the institution itself and its capabilities. There may be need for change but change should be determined and introduced within the existing food pattern of the institution.

In the past the success of culinary operations has been judged by the per capita cost and by lack of complaints from the wards. Neither is satisfactory as evidence. An expensive diet may be nutritionally inadequate while an inexpensive one may be entirely adequate. Likewise, complaint is one of the perogatives of people who are not directly responsible for the procurement and preparation of the food they eat.

Now then are we to meet these diverse problems? The first formal steps are planning and nutrition accounting. Before considering nutrition accounting in itself, I would like to dispose briefly of the problem of acceptability. The meals served in institutions are the center of the ward's interest, they are one thing that can change and can be anticipated. From an administrative standpoint, however, meals must be provided within the limits of nutritional adequacy and a reasonable expenditure of funds. It is a challenge to provide varied and attractive meals. Such meals are attained through thought, planning and organization of persons, and not alone by food, as food. It is what is done with food which determines success. Hence it may be cheaper

to employ and support competent food administrators, supervisory cooks and bakers than to spend additional money for food. Penal institutions have an advantage over other public institutions in that they often have wards with some experience in food preparation. There are also a considerable number of hands that can be used under direct supervision to do the extra work necessary to prepare for special foods. Prison wards also have their limitations. Their period of availability may be short and they cannot be expected to put the interests of the institution above their personal interest, or that of the population as a whole, over those of a particular group. On the whole, under good supervision they often do exceptional work. I repeat, ~~It is~~ the problem of food preparation and service is the most important and difficult one in mass feeding. While I shall not discuss it further here its importance is continually recognized.

The successful administration of a feeding program requires a plan or basis for the routine determination of the food requirements of the population and a method of accounting for the operation in terms of the food used. The food accounts must be in a simple form that can be readily interpreted as to nutritional adequacy for at least the average of the population.

The plan may rest on one of a number of bases, such as,

(a) a per capita or overall allowance of money

(b) an arbitrary ration in terms of quantities of foods and food groups preferably determined by past experience

(c) stated in kinds and amounts of food required to serve standard portions of food as specified by typical menus for 10 days, a month or a quarter.

In each case the quantities of food provided should meet the nutritional allowances of the Food and Nutrition Board of the National Research Council. These allowances are the best technical material available. They are an impartial scientific yard-stick.

The success of the first and second methods depends entirely upon the ability of a particular institution to plan its own program. They offer the maximum opportunity for individual initiative. Since they do not have a background of quantities of food they need the support of nutrition accounts as evidence of suitable accomplishment.

The third method has the advantage that while it provides limiting quantities of foods, and especially the more interesting and expensive foods, it specifies the variety and approximate number of times to be used so that even a poor steward or cook must serve some variety. In addition as compared to master menus it does not restrict the supervisor, steward or cook so that he cannot exhibit his talents and receive the approbation he deserves. Another advantage of this method is that the quantities of food specified may be used to provide a cost-of-living index for use in budget estimates and for planning farm production.

Some of you operate with money allowances only. The Bureau of Prisons, because its institutions are widespread, uses the second ration basis. Within its institutions, however, the third method is in effect, used both for the annual budget planning and for quarterly operations. The California institutions use a quarterly food control of the third type. In addition they operate on quantities of food with adjustments in the money allowance to purchase them according to changes in the cost of the basic food allowance. Both groups employ nutrition accounting.

The use of a "standard portion" or serving is important. It may vary with different agencies but should be agreed upon and be the same for all institutions under the same administration. The successful use of standard portions is sometimes complicated by the size of containers in which they are served; obviously a six ounce portion of milk or coffee served in a ten ounce cup, is not satisfactory. This means that the table utensils must be purchased in relation to the portion sizes to be served. Many of you have in your organizations data on portion sizes. I am sure you use ladles of known capacities for servings. I am tempted to reiterate the importance of the equal distribution of the more interesting foods, such as meats, eggs and desserts, to all persons and the absence of special groups to be fed as factors in satisfactory feeding in institutions. Also that unlimited quantities of one or two of the basic foods, such as bread and potatoes, should be provided to cover the variable caloric requirements of individuals, provided they are consumed and not wasted.

A food allowance of some sort is the key to successful operations. The detailed monthly or quarterly allowance may be used for (a) the preparation of budgets in relation to the cost of living, (b) the purchase of food, (c) the planning for production on the farm, (d) the store room operations (e) menu planning, and (f) the final accounting. In actual practice there should be considerable latitude permitted an institution as to the kinds and amounts of individual foods within the food groups used provided it remains within the monetary allotment based on the allowance and so long as the nutritional adequacy of the diets served is maintained. The extent to which an institution may be permitted to deviate from a food plan will depend on the knowledge, training and integrity of its personnel.

An accounting of the food used, or nutrition account, is the first routine evidence of a successful feeding program. In this it is an important administrative device. It furnishes (a) evidence of the discharge of an administrators responsibility, (b) a basis for the nutritional and financial appraisal of culinary operations, (c) justification for requests for necessary financial support. If you can produce evidence that it is impossible to provide even a simple diet that is nutritionally adequate, you have a sound basis on which to request relief and a defense should the funds be denied, (d) since it is a routine account, it is evidence to refute charges of inadequate diets should persons who complain after they have left your institution, (e) direct evidence to the resident population that its diet is adequate and that you are concerned about it, (f) evidence to employees as to the success of their efforts, (g) the basis for their correction wherever they occur, (h) the starting point for improvement, the detection of errors.

The food portion of the nutrition account is the average amount, in pounds, of foods or groups of food used by one person in a day, during the period of the financial account - usually a month. Foods are grouped together because they,

(a) have similar nutritive value or use

(b) are unique, such as eggs

(c) are used in large amounts, such as potatoes. This is to provide information on the extent to which other members of the food group are used.

(d) make a special contribution to the diet, such as the acid citrus fruits and tomatoes for vitamin C, or butter and margarine and other fruits than citrus which may affect the acceptability of the diet.

for example, bread may be made a sub-group and also spaghetti, macaroni and rice. The latter because they may be misused in some diets.

Some groupings of foods are rather well established, such as the one used by the United States Army, the State of California, and the Veterans Administration. It is as follows:

Meats, fish and poultry

(Some institutions divide these into 3 sub-groups)

Milk and milk products

(Some institutions separate cheese as a sub-group)

Fats - butter and margarine

Other fats

(Bacon and fat back are sometimes included with "Other Fats")

Grain products

(Bread; flour; spaghetti, macaroni and rice, are sometimes sub-groups)

Legumes, dried beans and nuts

Sugars, syrups and jellies

Vegetables

Leafy, green and yellow

Tomatoes and tomato products

Potatoes

Other fresh and canned vegetables

Fruits

Citrus fruit

Other fresh and canned fruit

Dried fruits

Beverages

Leavening agents

Miscellaneous

The Bureau of Human Nutrition and Home Economics of the U. S. Department of Agriculture uses a grouping that is similar to this except that it combines the fats into one group and other fruits and vegetables into another. Whatever grouping of foods is used it is important to prepare and distribute a detailed outline to be used throughout the operation.

Since foods are purchased or delivered from the farm or garden in a variety of conditions, such as; carcass and retail cuts of meat; fluid milk, cheese and dried milk; canned, frozen or dried vegetables and fruits, and they also arrive in various size containers, it is necessary to reduce all the foods within a group to a comparable state, and to the same unit of measurement. Thus all meats are reduced to their carcass equivalent; all milk to its fluid equivalent; and canned fruits and vegetables to the purchased equivalent. All quantities should also be reduced to pounds, including milk. There are tables for such conversion or factors may be established for them. It is not necessary to reduce articles and spices in the miscellaneous group to pounds used - the average cost as related to the standard use, is sufficient.

The nutrition account should cover all food used, whether purchased, produced or received as gifts. If for any reason it is desired to separate one source from another that should be done in sub-accounts and combined into a total for the group. The nutrition account is for food used; food spoiled in storage or accident, should be accounted for as such.

One of the most difficult problems in institutions is to make use of, and to account for, farm and garden produce and still have evidence of the food actually used in preparation in the kitchen. (Records of table and kitchen waste take care of and present evidence on losses from the kitchen and dining room) It is often necessary to make use of poorly graded farm produce but the kitchen should not be unfairly charged for it. The farm wants credit for its work. My suggestion is to weigh the fruits and vegetables after they have been prepared and are ready for cooking and to apply to this weight a correction factor based on standard quality food. Credit the farm with this amount. The difference should never have come into the kitchen. Farm production should be planned in so far as possible, to meet the needs of the population and preferably tied into the food allowances and purchases.

The per capita value for each food group is obtained by dividing the total quantity of food used by the number of persons who ate it, or man-days. This requires accurate counts of all persons eating. If cooks or visitors eat they must be counted. Should any persons not eat all the meals in a day the number of meals served should be recorded and the total number per month be divided by 3 to obtain the man-days. If for any reason a considerable number of people eat only the main meal it may be necessary to make further adjustment to allow for this.

The nutrition account should be prepared in the business office and be a part of its responsibility. It is not difficult nor unduly time consuming. It requires organization and identification of the cards normally used in the financial account so that they may be suitably grouped for addition each month. Where cards are not used it is desirable to arrange the ledgers by food groups. The nutrition account may be rather simply accomplished in small institutions.

The food portion of the nutrition account does not carry the apparent accuracy of a financial account balanced to the last penny. It is based on the detailed receiving records of an institution which should be reviewed when necessary. The account is the average, usually of a very considerable number of persons and a large amount of food during a month. Marked variations in the use of various food groups are, therefore, worthy of study. Nutrition accounts give confidence of desirable and correct food use and lead to detailed investigation of undesirable practices. Recurring acceptable results give continuing support to a well conducted culinary department. Nutrition accounts are subject to accidental or intentional error. In either case they are evidence which is verifiable or point to the need for further attention. It is unnecessary today to go into the details of reviewing a nutrition account to check nutritional adequacy except to remind you that a deviation in the weight of one group of foods is not evidence of a change in the nutritive value of the diet as a whole. Changes in the quantities of other foods used must be examined. When compared with a ration the possible surplus which exists in many diets in order to provide enough of the nutrient present in lowest amount must be considered in the analysis. Wastage of food must also be considered.(It is assumed that records will be available on table and kitchen waste)

Where a food allowance or ration has been established comparison with that is often helpful, as well as with nutrition accounts on food patterns of other institutions. A word of caution is necessary with regard to such comparisons. First be sure that nutritive requirements of the population are the same and the data are on a similar basis. The food

distribution of an institution is a reflection of the foods available, the skill, competence and ingenuity of your culinary staff and even the personal attention of the administration. Your food distribution may be entirely acceptable to your population and if nutritionally adequate any difference in foods is not in itself a justification for change.

Rations are particularly vulnerable to misinterpretation. They are usually planned not only to provide for the average person but contain an overage to take care of the variables, including waste of mess operation. Such provisions are desirable. They mean, however, that the quantities are not those that must be used, but usually the limit beyond which it is undesirable to go. A failure to use all of a food group or foods in the ration may be evidence of efficient operation, rather than inefficiency. The condition of your wards is the measure of success. You can turn to your physician in determining the condition of the population. If there is evidence of mal-nutrition he must judge the individual on his body build in relation to weight and height and differentiate those who are mal-nourished because of chronic disease from those that are undernourished because of lack of sufficient food. Individuals with chronic disease should be placed under his care for special dietary treatment rather than to modify the diet of the institution as a whole to correct the difficulties of a few. In large institutions the leeway provided in the ration is usually sufficient to take care of the average number of special cases. The excessive use of particular foods on the physicians prescription is properly a hospital expense chargeable to medical care, just as drugs and medicines are charged and accounted for.

& food control and

How do we set up nutrition accounting? Most institutions have records of amounts of food used. My suggestion is to make use of these records to determine past experience in typical months, preferably those with no holidays in spring, summer, fall and winter of the past year, and one or two months of the current year. These data will indicate the present practices of your institutions and should be used as the basis for any changes that might seem desirable or necessary. Such a procedure is much better than using the experience of some other institutions or group of institutions. The data represent the resources, skill and facilities of your area. They should be examined and studied in relation to nutritional adequacy. The first adjustments, if needed, should be made in relation to such adequacy with the foods that are customarily used, rather than to follow the food pattern of some other portion of the United States. It is important to remember that public charges accept innovations that appeal to them with alacrity and resist their withdrawal with the same vigor. Before making a change be very sure that you can continue to support it.

The first routine use of nutrition accounting in institutional operations was initiated by the Bureau of Prisons, U. S. Department of Justice. With institutions in various parts of the United States it was possible to know at the central office each month the character of the operations at the various institutions. It was possible also to determine and advise institutions (a) that were not using sufficient quantities of certain kinds of food, e.g. leafy green vegetables to assure a nutritionally adequate diet; (b) those that did not have sufficient control over their operations to prevent the excessive use

of the more expensive foods; or were using more expensive products than was justifiable; and (c), with copies of the menus, where the meals were not sufficiently varied in kind or method of preparation and garnishment to suggest changes to make them acceptable. It was also possible to commend and support institutions that were operating successfully.

Through the nutrition accounts it was possible to develop the culinary personnel, without interferring with their initiative. Later the establishment of training in culinary operations further strengthened their performance.

The responsibility for the preparation of the nutrition accounts was properly placed in the business or accounting department. With the proper organization of the records so that the foods used could be readily assembled by food groups, the preparation of the nutrition accounts was not a heavy burden on the accounting department. Even had it been more a burden it was justified both because of the money involved in feeding a large group of people and the importance of knowing that the expenditure had or had not afforded the average man an opportunity to have a nutritionally adequate diet.

Some of you may say - "That is all very fine for the Bureau of Prisons but we have only a few institutions, why go to all the trouble? We can keep in close contact with them. We have no need for nutrition accounts." Again the answer is; feeding people is a responsible operation, important enough to be able to show that it has been accomplished. The nutrition account is evidence not only that the administration has handled its monetary allotment properly, but also how it has utilized the money properly in terms of food. It is the first evidence of successful operations which is interpretable in terms of nutrition, probable acceptability,

and proper use of funds. It has possibilities of error both accidental and purposeful. Since it is a recurring record, many of these errors become apparent by comparison of a series of records or with the experience of other institutions. The capacity of a man's stomach is limited. I have detected errors in the past because the quantities of food apparently used were beyond the capacity of a giant. The nutrition account is the beginning of analysis. At times it is necessary to review the quantities of the individual foods used within a group. In one case there were so many parsnips used it was obvious that the diet was not satisfactory. In another, the quantity of potatoes used was beyond satisfactory experience. In this case it represented the inadequacies of the farm operations and deterioriation in storage. But some one must be careful even with such cases for there was one case when the consumption of dried beans was so large I was concerned as to the acceptability of the diet. When I visited the institution there were complaints because more beans were not served. In this case the apparent excessive use of beans was justified.

To summarize, you have a responsibility to feed the people under your care a nutritionally adequate diet at a reasonable cost. There are many ways in which nutritional adequacy can be achieved. You need a device with which you can appraise your operations for your own satisfaction and with which to demonstrate beyond a reasonable doubt that you were successful. If your operations were in error it should detect and indicate how to correct them. The nutrition account is such a device. Use it to study your present practices. Decide what must be done. Try out and introduce changes and procedures gradually, often one at a time, as they can be adopted, and finally reduce your program to a formal

plan in sufficient detail that it will be the basis of reference at all levels of operation.

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REPORT AND RECOMMENDATIONS

ON

NUTRITION POLICIES, PRACTICES, AND OPERATING PROCEDURES OF THE STATE OF CALIFORNIA IN FEEDING AT RESIDENTIAL FACILITIES OF THE

Department of Corrections
Youth Authority
Department of Education
Department of Mental Hygiene
Department of Veterans Affairs

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Prepared by

PAUL E. HOWE
Special Nutrition Consultant

to the

Director of Finance
Department of Finance
State of California

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Part III - Food Allowances of Various State Agencies

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JAMES S. DEAN
DIRECTOR OF FINANCE

EARL WARREN
GOVERNOR

STATE OF CALIFORNIA

Department of Finance

SACRAMENTO 14

Honorable James S. Dean
Director of Finance
Sacramento, California

Dear Mr. Dean:

Subject: Report and recommendations on nutritional policies, practices and operating procedures of the State of California in feeding its wards

The nutritional policies, practices and operating procedures of various agencies of the State of California in feeding its wards have been reviewed in accordance with Contract No. 846, dated February 23, 1951, and extended as of August 27, 1951, executed by the Department of Finance. My report is attached.

A preliminary report was submitted August 30, 1951. It constitutes with slight revision the first part of the final report.

The remainder of the report is a review of the practices and policies, as I understand them, with considerable comment in relation to their operation and background which seemed important for consideration in future application of the suggestions or recommendations.

The Food Control System integrates all the procedures and practices necessary for feeding people; from the budget to the dining room (budgeting, planning, estimating, purchasing, production, transportation, service of meals and accounting for foods). It is a well-conceived and effective plan; it should be reduced to an Inter-Agency Manual in order that it may become even more effective. My report, therefore is concerned not with the basic plan, but with details in relation to its use and operation.

The food allowances of all the agencies provide sufficient food in kind and amount for nutritionally adequate diets and acceptable meals. Improvement in its application lies more with people and what they can do with food than through major changes in food allowances.

The evaluation of nutritional adequacy of the food controls is largely a technical procedure which I have applied in arriving at my conclusions. The question of the acceptability of meals that can be prepared from the food contains a large element of judgment. In forming my conclusions with regard to the use of the food provided I have done so on the premise that variety and attractiveness of meals is obtained through intelligent, skillful use of simple food with suitable equipment. I have assumed that the meals in an institution should be a demonstration, to the wards, of good management and handling of average resources and an experience of good government in action and not an example either of public indifference to their need or careless and extravagant use of public funds and facilities.

Very truly yours,

Paul E. Howe

Paul E. Howe
Special Nutritional Consultant

September 28, 1951

NUTRITION POLICIES, PRACTICES, AND OPERATING PROCEDURES OF THE STATE OF CALIFORNIA IN FEEDING AT RESIDENTIAL FACILITIES UNDER JURISDICTION OF:

Department of Corrections
Youth Authority
Department of Education
Department of Mental Hygiene
Department of Veterans Affairs

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Part I

SUMMARY REPORT AND RECOMMENDATIONS

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By

PAUL E. HOWE
Special Nutrition Consultant

to the

Director of Finance
Department of Finance
State of California

SUMMARY REPORT AND RECOMMENDATIONS ON THE NUTRITIONAL POLICIES, PRACTICES, AND OPERATING PROCEDURES OF THE STATE OF CALIFORNIA

In accordance with Contract No. 846, dated February 23, 1951, and executed by the Department of Finance, a survey was made of the nutritional policies, practices, and operating procedures of various State institutions and facilities under the jurisdiction of the following State agencies:

Department of Corrections
Youth Authority
Department of Education
Department of Mental Hygiene
Department of Veterans Affairs

The operations of a representative number of institutions under the jurisdiction of the above agencies mentioned have been visited and conferences held with the heads of the departments and their assistants, particularly the Food Administrators.

My observations and recommendations are summarized as follows:

(a) The Food Control System now in use in all agencies provides sufficient food, in kind and amount, to meet the nutritional requirements of the wards of the State, and capable of preparation into wholesome meals of reasonable variety. The allowances are also a satisfactory basis for the estimation and allocation of money for their purchase and the adjustment of funds to prevailing levels of the cost of food.

(b) The system is unique in that the Food Control integrates administrative and operational procedures (budgeting, planning, estimating, purchasing, production, preparation, transportation, service of meals, and accounting for funds) and permits an approximate evaluation of nutritional adequacy through sets of food allowances or Food Controls that are used at all levels of operation and responsibility.

(c) The food allowances are established on the nutritional needs of people, characteristic of the population with regard to age, sex, activity, and condition. They are based not only on nutritive requirements and reasonable acceptability but also the possibilities and limitations of their use, such as kind and availability of average equipment, personnel and management (administrative, supervisory and operating) for preparation and service of reasonably palatable menus in portion sizes that furnish a satisfying meal. They contain an additional allowance to provide for second helpings of certain items and for poor management. The food allowances are determined:

(1) on quantities of groups of food of similar nutritive value or use so that they are adaptable to seasons, regions and community preference.

(2) on definite kinds and amounts of particular foods within each group which are related to portion size and weekly or monthly frequency of serving in a fiscal quarter.

The Food Control is useful in relation to the nutritional accounts of the quantities actually used, as a basis for the ready determination of the nutritional success or failure of feeding operations.

(d) The food allowances are different in the various agencies because of inherent differences both in the population and the inherent conditions under which they were developed. There are possibilities for change and more satisfactory meals through improvement in operations and skill of employees. Such improvements should result in savings in food and occasionally lowered cost. There are possibilities for adjustments within the present allowances in the hands of competent Department and Institution Food Administrators. In no case is there a need for a relative increase in cost except as it relates to the cost of living.

Comment: The Food Controls of the various departments and agencies are determined in relation to the basic nutritional requirements of specific populations and the experience of the past with regard to the kinds and amounts of food and method of service that will produce reasonably satisfactory meals with the personnel and equipment available. Such allowances contain additional quantities of food to cover wastage of food, failures of operations, and inexperience of personnel, i.e., they provide for the use of average equipment and personnel and the usual waste or loss in preparation, mis-use and in consumption. The State has provided or is providing adequate equipment and areas for food preparation and service of meals.

There is every reason to expect that with sufficient employed personnel and supervision considerable improvement in satisfaction is to be expected in the next few years, without an increase in cost relative to the cost of living if the present food allowances are retained.

The food allowances are, usually, upper limits and not the quantities that should be used up, irrespective of need. They are allowances within which to operate. With skill and control less of some foods will be used. The nutrition accounts will be the first indication as to whether the usage is improper. The allowances should be subject to modification, either decreased or increased on scientific or other evidence and experience. Where considerably less quantity of food is used evidence of sufficiency such as body weight for height and observations of the physician should be obtained.

The present food allowances for the various populations are such that improvements in quality of food will be attained through attention to details of preparation and service under the influence of alert resourceful Institution Food Administrators. They will require the wholehearted backing, approval and support of the Superintendents and Business Managers. They must be carried out within the routine of daily food preparation, distribution, and service and with the assistance of competent adaptable supervising cooks or within the limitations of less capable or adaptable ones. The improved menus will be accompanied by less waste and in some cases in different food allowances and saving in cost. Control over distribution of food in some cases will make more food available with which to work.

(e) After establishment of the Food Controls, they are, or may be, used for:

(1) pricing to determine budgetary needs.

(2) estimating, ordering, purchasing, producing and issuing supplies.

(3) menu construction. (The foods within the food groups are used for menu construction on the basis of a basic menu pattern and standard portions; with a normal percentage additional to provide for second helpings of the inexpensive foods necessary to adjust the total intake to individual needs and appetite. The different kinds of foods specified and use of the menu pattern assure a variety in meals even in the hands of inexperienced cooks, and opportunity to a good cook.)

(4) construction of recipes.

(5) regulation of the use of foods and food supplies so that they are evenly and suitably distributed in relation to people (quantity per person) and time.

(6) preparation of plans for new construction and remodeling of facilities and even size and type of tableware.

(7) nutritional accounts as a means of checking the nutritional adequacy of the average quantity used and, with financial accounts the control, correction or modification of food allowances.

(8) the establishment of confidence of the wards and citizens of the state in its operations through evidence and knowledge that the diet meets generally accepted scientific standards of nutritional adequacy and that the kinds and amounts are not a whim of the immediate responsible officer.

(9) support to less experienced personnel in the performance of their duties in planning, procurement, preparation and service of food and a guide against which to check their operations. They are the base from which experienced personnel is developed.

(f) The Food Control System is fairly well established at the Departmental level. There is much to be done at the institution level in spite of the fact that at present wholesome adequate meals are produced on time.

Comment: The success of the system lies in its basic soundness and breadth (nutritional requirements, food groups) and by sufficient detail for its operation (specific kinds and amounts of food within food groups, on which cost is determined and variety of foods assured, and number of times of service within a quarter) and the provision of professionally trained supervisory personnel to assure its successful operation. The basic Food Control permits adjustments to seasonal availability, and institutional differences. The details of method of operation and accounting should be similar in all institutions. The only differences will occur in the kinds and quantities of food used

by various agencies, and adjustments to these differences. The kind and number of supervisory personnel and employed operating personnel will vary with agencies, primarily in accordance with the use of the wards of the State in the culinary department.

The particular problems at the administrative and departmental level and action required are such as the following:

(1) preparation of a Food Control Manual descriptive of all phases of the food control operation.

Comment: The Manual should include not only food and the detail of its use by the operational staff and their responsibilities and other relations, but the philosophy and administrative detail for procurement, purchase, production, issue, preparation and accounting together with duties of responsible officers, each phase of their responsibilities and relation to each other. The provision and distribution of food accompanied by and accounting for its use, is the concern or responsibility of so many people and personalities, that it is necessary that there be a framework within which they can operate. With it as a basis they can judge necessary deviations or changes at the institutional level. Concrete evidence of the value and need for a Manual was found in the Youth Authority Camps where both administrative and kitchen personnel constantly referred to and used a slightly less extensive manual developed for their particular problems. The intent of the manual proposed is to bring an understanding of the Food Control which will result not only in good operation of the culinary departments, but a uniformity in common factors of procedure, especially between institutions, central and financial agencies. It is not intended to restrict operations. It should, however, define conditions and procedure within a unit of administration or operation and provide detail and information necessary for successful operation between units and for preparation of similar comparable reports and accounts on which to judge operations.

(2) The integration of the procedures of the various agencies at the departmental level so that their records and accounts are interpretable both for money spent and nutritional accounts on the use of food. Such accounts are evidence that the money spent for food has accomplished the purpose for which it was expended. This involves the maintenance of records and accounts for food in such a way that the quantities of each food group may be easily summarized and reduced to a per capita usage at monthly and quarterly intervals from the Stores and Farm accounts.

The nutritional accounts. Elaborate accounts and records are kept of individual foods in institutional and departmental operations which are the basis of financial integrity. A nutritional account is the first evidence of the proper use of the money for which it was allotted. With proper organization of the accounts, the preparation of the nutritional account is relatively simple and direct. The administrative accounts, however, are not always kept in such a way that they may readily

be reduced to a nutritional account. There is a possible confusion in relation to preparation of lists for purchase and those for nutritional accounts but that is primarily a question of identification on the machine record cards used in most institutions and their assortment prior to preparation of estimates for posting of the accounts. Nutrition accounts are prepared in prison road camps and used effectively in the Department of Veterans Affairs. The Bureau of Prisons, U.S. Department of Justice, has used them successfully for a long time.

The nutritional accounts are not only of value as evidence of discharge of an institution's responsibility but they are also the point of departure for correction of misuse of food and changes in food allowances either up or down, since they represent what was done and not what was planned.

(3) Provision for restricted adjustments in the kinds and amounts of foods in the present food control within and between certain food groups and the cost of the present food allowances for each group. These changes should be permitted only with due regard to the maintenance of the nutritional adequacy of the diet as a whole.

Comment: The allowances for normal waste, management, and average personnel in the present Food Controls are sufficient to permit minor adjustments in the kinds and amounts of food, in and between the allowances for each food group or combinations of certain food groups, without affecting the nutritional adequacy of the diets. They may result in better use of food and greater satisfaction than is now allowed.

Such adjustments should be permitted at quarterly intervals at the institutional level where a Food Administrator is on duty to assure the maintenance of nutritional adequacy and proper distribution of food. Recommendations for change should be accompanied by a statement of the effect and method of estimation of changes in relation to cost and nutritional adequacy.

The need for making the changes at the institutional level is the limitation which exists, in different facilities, with regard to the ability to use, prepare and serve food, the equipment available, and local production. In the course of experience with adjustments in institutions, for at least a year, a department may desire to make permanent changes in its basic food controls. Such changes should, however, not require an increase in cost, other than in relation to the cost of living. It is believed that in some cases there should be both improvement in operation and reduction in cost.

(4) Free the Food Administrators as much as possible from the details of office work and enable them to operate professionally within the departments as advisors to the institutional food administrators and contribute to agency conferences. This will be facilitated if they are provided with full-time clerk-typist assistance, or, where necessary, an assistant food administrator.

Comment: A considerable amount of the time of Department Food Administrators is spent in the details of office work, some of it necessary, but a considerable amount could be taken care of with suitable training by the clerk-typist. The development of the in-service-training and need to spend sufficient time at institutions to get beneath the surface and to become acquainted with their operations makes the time available for routine office duties very limited.

(5) The establishment of an inter-agency experimental kitchen.

Comment: An experimental kitchen would permit studies to improve methods and techniques of institutional cooking and to develop, and standardize recipes based on the food allowances provided in the food control. Promising new ideas and proposals submitted by the culinary personnel of the various institutions would be investigated and tested.

Studies and recommendations would also be made of proposed plans for kitchen layouts and workflow, in relation to efficiency of operation, before commitments for new or remodeled kitchens were approved; studies of operations actually carried on in institutions and the kind of equipment needed to promote efficient service and provide the basis for specifications on which to purchase new equipment or to design equipment better suited to particular needs.

Studies are also needed on which to establish good standard practices in the operation, use and care of equipment; to determine standards as to the number of posts, reasonable workloads and kinds of in-service-training needed to increase efficiency and develop good attitudes in the culinary personnel.

Work of the kind suggested in the first paragraph could be done in a small institution kitchen but the results should be further tested with the facilities and in the routine of a larger institution kitchen. Hence it is recommended that an experimental kitchen be established in one of the larger institutions, fairly near Sacramento, where the preliminary work could be done. The ideas could then be tried out in the regular kitchen under the direct supervision and control of the experimental kitchen.

The major cost involved in this work would be the salary of a research cook or dietitian in charge of the experimental work. He should have special training in chemistry and physics as applied to food preparation, and in the art of cooking. A dietitian operating under the supervision of an institution food administrator with such training might be acceptable.

It is my opinion that the initiation of studies of the particular needs of the institutions of California, on which further planning and development could be based, is a sound policy in view of the necessity for large and continuing capital investments in building and equipment and the cost of the overhead, the operating personnel and the food itself.

(6) Compilation and adoption of data on which to base estimates of the size and type of construction and equipment for culinary departments and dining rooms as well as to define the objectives in a satisfactory kitchen by the Division of Architecture and the Department Food Administrators.

Comment: Data on construction, equipment and facilities should be developed in relation to the Food Controls and unit or various sizes of population. They can then be expanded to the contemplated population. They would be useful for remodeling as well as new construction. There is also need for agreement between agencies as to types of equipment required and the development or redesigning of equipment particularly suitable for institutional use. Some of this material is covered in the "Manual of Mechanical Engineering Procedures", Division of Architecture, Department of Public Works, and in "Architectural Culinary Planning Information for the Northern California School for Cerebral Palsied Children", but there is need for agreement between all agencies and use of the past experience in planning culinary departments and the future needs of agencies.

(7) Review and revision of specifications for the purchase and methods of control for delivery of food by a permanent inter-agency committee composed of representatives of the Purchasing Division of the Department of Finance, and all agencies using food. Use of the Inter-Agency Food and Nutrition Committee for the discussion and unification of institutional problems and practices common to all agencies.

Comment: It is desirable to adopt a common basis of operation with regard to feeding in all agencies in so far as possible especially as it relates to the operations in the Department of Finance. The various agencies concerned with feeding people should have representatives on this committee. Many of the problems will be cleared in the preparation of the Food Control Manual but new ones are certain to develop. There is need for a representative in the Purchasing Division, Department of Finance, trained in inspection of food to visit institutions and instruct and train personnel in the use of specifications and inspection of food delivered.

(8) Provision of a food and nutrition consultant directly responsible to the Director of Finance.

Comment: The Food and Nutrition Consultant would advise the Director of the Department of Finance on programs and problems related to the nutritional adequacy and acceptability of dietaries provided for individuals or groups of individuals for whom the State assumes complete or partial supervision. This would include not only state institutions under the supervision of the Department of Finance, through various state agencies, but also consultation to counties and communities through field representatives of state agencies having responsibilities as the result of state subsidies to county and local communities.

As a representative of the Director of the Department of Finance, the duties of the Food and Nutrition Consultant would include the following in relation to food and nutrition: .

(a) Assist in developing policies with regard to feeding public charges and methods of effective operations.

(b) Review the requests for appropriations having to do with food and nutrition, and facilities for food preparation, architectural designs and equipment for kitchens, and food preparation and serving units, and evaluate the probable effectiveness of the use of such funds if appropriated.

(c) Attend technical conferences on food and nutrition.

(d) Maintain formal or informal contact with those individuals in state agencies who have official activities concerned with food and nutrition.

(e) Advise members of Divisions or Bureaus in the Department of Finance with regard to food and nutrition and upon request or assignment by the Director other agencies or divisions of government or their representatives.

(f) Review, and correlate when necessary, reports on food and nutrition presented to the Department of Finance.

(g) Prepare reports.

The need for the compilation and publication of the Inter-Agency Manual on Food Control and the Food Control System has been noted. It should require immediate attention; likewise the codification of procedures for keeping records and accounts would be aided by the Food and Nutrition Consultant.

(g) The problems at the institutional level are more diverse and intangible than at the departmental level. A suitable variety of foods has been established in the Food Control and adequate facilities have been specified or are planned and contemplated. The problems lie, primarily, in the supervision and use of the employees and assistants available, in; a) the proper use and distribution of food, and b) the actual preparation and service of food available, to make better use of the present food and reduce the additional allowances provided to cover bad management. The changes must, necessarily, be carried out gradually as they can be introduced into the procedures of an institution to reduce their impact on the regular production of food and permit the population to accept them as part of the regular routine.

The employees have variable abilities, understanding and willingness to perform. The solution of many of the problems does not lie entirely in the direction of the assigned activities of the employees; important as that is. It lies, essentially, in the training and development of the personnel involved, during the supervision of their work, to increase their skills and also to develop an understanding of the employee's

relation to the work as a whole and to other workers and their contributions to the general welfare of the institutions. In other words it is a little "why" with "what" to do and the discharge of their responsibility to the State.

The best use of the food provided, and the personnel and equipment of the institutions will be facilitated through:

(1) Adjustment in the administrative accounting offices and the store room, farm and culinary department to the basic details of the Food Control. This will be facilitated through the preparation of an Inter-Agency Food Control Manual.

(2) Completion of the appointment of Institution Food Administrators and Supervising Cooks, justified by the importance of meals to the health and care of the wards and the financial investment of the State in food and the culinary departments.

Comment: One of the largest expenditure classifications in the operation of the government of the State of California is the feeding of some 54,000 patients, inmates and workers in the correctional institutions, mental hospitals, forestry and road building camps, veterans homes and special schools. It is estimated that these expenditures, for food alone, will exceed $17,000,000 next year. The expenditure of this not inconsiderable sum places a heavy burden upon the people in charge of the operations. The way this money is used has an effect upon the health, morale, and rehabilitation of the wards, over whom the State has custody. As indicated in the introduction to this section the discharge of the responsibility is complicated by the variability and competence of the employees available as well as the complexities and added cost introduced through the establishment of the eight hour day and five day week for the three-meal-day and seven-day-week operations necessary to feed people.

Trained, competent, alert supervisory personnel are required for the success of a food service not only to plan, organize and direct the necessary work but to integrate the number and personalities in overlapping shifts and the facilities of the institution for the regular preparation of nutritionally adequate acceptable meals. The possibilities of provision of better meals within the present food allowances and ultimate savings in food, and often in money, lie in the capacities and capabilities of the food administrators, food managers, and supervising cooks. The supply of properly trained personnel is very short and those with experience even more so.

The fact is due, in part, to the lack of suitable training and instruction in educational and vocational schools, which train primarily for non-public work. At present personnel must be developed through experience in the State institutions.

(3) Provision of General Dining Room Supervisors (as distinct from supervisors assigned to a particular dining room) under the Food Administrators in institutions of the Department of Mental Hygiene with a number of dining rooms, fed from a central kitchen.

Comment: Where the number of dining rooms is relatively small the appointment of an Assistant Food Administrator would be preferable; he could then be a relief for the Food Administrator and assume responsibility in emergencies as well as supervise the food service.

(4) In-service training of supervisory cooks and cooks and orientation of cooks.

Comment: The need for in-service training and the type of training has been indicated in the comment appended to the need for food administrators and supervising cooks. The plan to provide both departmental and institutional food administrators and supervising cooks for the operation of the Food Control System is, in itself, a program of in-service training. The contacts between individuals becomes more direct, detailed and personal from the departmental food administrator to the supervising cooks. The technical knowledge is present in the Food Administrator and the practical experience in the Supervising Cook. The institutional food administrators can do much, but unfortunately they have not been employed and operating long enough to demonstrate their technical ability and understanding of administration and management. In some cases, the food administrator has not been accepted by the supervising cook. But where the liaison and mutual respect between the food administrator and supervising cook have been established there is an entirely different atmosphere and the possibilities of effecting in-service training are evident.

The in-service training of supervising cooks is to develop their experience and knowledge and enable them to study, solve and improve the details of kitchen operations. The training of cooks is to develop their understanding of their work, the special problems and limitations of institutional cooking as well as to increase and perfect their skills.

While the provision of administrative and supervisory personnel will result in considerable on-the-job training there is need to support it and obtain the benefits of group dynamics through group discussion, lectures and usual training. It is my personal opinion that the State is not justified in additional compensation for in-service training beyond the time and necessary expenses of the institution, other instructors and the materials required. This applies to time spent outside of official hours. In-service training is for the benefit and the ultimate advantage of the employee. It enables him to qualify for advancement.

There is need also for the preparation of a planned, integrated series of bulletins or leaflets on small segments of the background and practices of food preparation and service of food to be posted on the bulletin boards of the culinary department, possibly at weekly intervals, for the benefit of those who choose to read.

In view of the limited amount of sound, organized, simplified material on institutional operations and the background of such operations available it will be necessary for the departmental food administrators to develop and publish it. Some of their experience and knowledge of this type of material has been presented in publications of the Youth Authority, Department of Corrections, Department of Mental Hygiene and the Prison World. The manual "Operating the Culinary Department" of the Bureau of Prisons, U.S. Department of Justice, is another example of a useful manual. There is also an informal Inter-Agency Committee on in-service training engaged in the preparation of material. The Department of Mental Hygiene had a conference of food administrators and supervising cooks which resulted in a better understanding of problems and duties. A training course in "Food Handling and Sanitation for State Institutions" has been prepared and published by the Departments and Agencies, Business Education, Publication No. 47, January 1950.

(5) The establishment of a demonstration kitchen in each of the departments and agencies to be used as a center for in-service training and orientation.

Comment: The kitchen should be adequately staffed and demonstrate high standards and efficient methods of food preparation and service. It should be continuously available for training assignment. The operation of the kitchen should not involve added expense, if properly staffed, unless used primarily as a training center, in which case an instructor, or an assistant to relieve the institution's food administrator, would be required.

The proposed demonstration kitchen is not to be confused with the inter-departmental experimental kitchen recommended. The demonstration kitchen is to provide opportunity to observe and participate in the usual routine activities of an institutional kitchen, carried on at a high level of competence.

NUTRITION POLICIES, PRACTICES, AND OPERATION PROCEDURES OF THE STATE OF CALIFORNIA IN FEEDING AT RESIDENTIAL FACILITIES UNDER JURISDICTION OF:

Department of Corrections
Youth Authority
Department of Education
Department of Mental Hygiene
Department of Veterans Affairs

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Part II

REVIEW OF THE PRESENT POLICY AND PRACTICES WITH RESPECT TO FEEDING

* * * * * * *

By

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to the

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A REVIEW OF THE PRESENT POLICY AND PRACTICES WITH RESPECT TO THE FEEDING OF WARDS IN CERTAIN STATE INSTITUTIONS IN CALIFORNIA

INTRODUCTION

The basic policy employed in the State of California in feeding the people under care or custody in its public institutions, and in budgeting the necessary costs, was first formally stated in the "Manual for Uniform System of Accounting for State Departments, Institutions and Other Agencies," issued by the Division of Budgets and Accounts, Department of Finance, in 1934. Of food requirements it states:

"Estimates for food supplies will be completed in accordance with the standard allowances based upon institution population in accordance with established diet requirements."

The policy is amplified in a statement regarding the method of estimating the cost of feeding in the "Explanatory Notes in Support of Budget Appropriations as Recommended in the Governor's Budget for 1947-1948 Fiscal Year," pages 57, 89 and 313 as follows:

"Feeding Allowances. These allowances are based on a full approved ration prepared by the departmental food administrator to provide the necessary nutritional requirements.

"These rations, expressed in terms of quantities of various foodstuffs required for the estimated population, are priced at State prices and then adjusted for the assumed changes in price levels, if any, in order to compute the gross cost of feeding. From this gross feeding cost is deducted the value (priced at the same assumed price level) of the estimated quantity of foodstuffs to be produced locally by the institution to arrive at the net amount to be purchased by the State. If food prices increase beyond the level assumed in the Budget, or if crop failure or other emergencies reduce the local production below budget estimates, the Department of Finance stands committed to supplement institution appropriations by the amount required to maintain the feeding standards set up on approved rations."

This policy recognizes the responsibility of the State to supply its wards with a nutritionally adequate diet through the provision of allowances of foods that meet their requirements, and to provide the funds to purchase the foods in the face of changing price levels. The reference to the food administrators recognizes the necessity for scientific appraisal of nutritional needs on which to determine the ration and adjust it to meet the varying needs of the wards of the different agencies.

By inference and practice the determination of the measure of nutritional adequacy and the level of acceptability of the ration itself is made the immediate responsibility of the departmental food administrators. So too is the operational procedure necessary to transform the definite quantities of common foods into reasonably acceptable meals. The pricing and procurement of the food required to maintain the ration as set up is the responsibility of the Department of Finance and the administrative staff of the institutions.

The quantities and kinds of food provided the wards under this policy appear to be based on food patterns characteristic of the population, the past experience of the institution and the personnel and equipment available for the feeding operation. They are expressed, as a ration, in quantities of groups of foods of similar nutritive value; specific kinds of foods within such groups which are used in large quantities; or foods that are unique because of a special use in the diet. The kinds and amounts of foods within each group, called the food allowances, are related to an acceptable, varied diet through basic menu patterns. These menu patterns plan the distribution of the food, by standard portion sizes, at daily, weekly or monthly intervals over each quarter year. (This procedure assures not only a nutritionally adequate diet but also variety in the hands of inexperienced personnel. In addition, it gives opportunity for adjustment to the varied availability of food, facilities and capabilities of individuals, at the various institutions.)

The food allowances and the pattern for their use are designated the Food Control. The operational procedures by which suitable meals are assured and accounted for is the Food Control System. It is the integration of budgetary, operational and accounting procedures which is unique in the State's policy and makes it effective.

The detail of food allowances of the Food Control System provides a basis for financial and nutritional accounts through which the public may be assured that the money was properly spent financially and nutritionally, and provided a reasonably satisfactory diet. The use of department food administrators, with technical knowledge, experience and skill assures professional supervision over the entire operation. They are capable of making an objective review and evaluation of the natural pressures for food and for modification of the food allowances which may be based on personal choice, habit, desire or ignorance, against their background of scientific knowledge, integrity, understanding of operational procedure and sense of public responsibility. Likwise an institutional food administrator or manager is provided who is able to evaluate the immediate problems of planning, ordering, purchasing and serving food in relation to his own organization.

The Food Control System has become fairly well established. It has grown out of and still contains much that represents past experience and outmoded methods of operating institutions. In many cases the population and operating personnel have adjusted to them. There is a natural rigidity in the routine of mass production and service of food and a resistance on the part of operating and administrative personnel and wards to the introduction of new ideas and the consolidation of mutual gains.

My review of the operations indicates that some clarification and formalization of the policies and procedures which have been found most effective would be in the interest of good public administration. This would also provide some measure of successful operation. The food controls are similar in all the agencies; they are established, operating and appear to be fairly successful. It is desirable that the essential and specific details of planning, budgeting, estimating, purchasing, producing, issuing, and accounting be brought together for review as a basis for more unified operation and for consideration of future modifications.

Good public administration sets up policies, outlines procedures and provides measures of successful operations. For this operation the policy has been established and measures for its operation have been developed. Appraisal of a feeding operation should include both financial and nutritional accounting; the first records the expenditure of money, the second the use of food. Financial accounting is well established and covered in the manual for accounting for State departments. Nutritional accounting is not so well established. It has two elements, appraisal of nutritional adequacy of the diet used, as compared with that contemplated, and reasonable acceptability. A policy requiring nutritional accounting should be incorporated as an integral part of the Food Control System in all agencies and appropriate procedures for their preparation outlined and required.

The general result of my observations and conclusions from them have been presented in my report of August 30, 1951. The accompanying discussion is an amplification of this report. It contains also material on which my conclusions are in part based. It will be presented topically with the general background presented above in mind. Clarity of exposition will result in some degree of repetition.

Nutritional Adequacy. Determination of the nutritional adequacy of a diet is a scientific problem concerned with the quantities and kinds of nutrients contained in the total quantitiy of foods regularly consumed in relation to the nutritional needs or requirements of a population. The ultimate measure of nutritional adequacy is, of course, the nutritional status of the people themselves. The quantities of nutrients, or nutritional allowances, developed by the Food and Nutrition Board of the National Research Council are a sound basis on which to appraise adequacy. These allowances are an agreement on the quantities of nutrients required to provide for abundant nutrition, and they carry a considerable factor of safety for the various nutrients. They are not minimal requirements but are set as a goal for abundant nutrition. The allowances are enough higher than the average requirement to cover substantially all individual variations in normal people. They do not include unknown nutrients or known nutrients for which insufficient data have been developed to justify a quantitative allowance. There is every reason, however, to believe that if the diet is obtained from natural foods with slight modification in processing, these nutrients will be supplied in sufficient amounts. The Food and Nutrition Board's nutritional allowances relate only to nutrients; they are the basis upon which a diet made up of foods is judged.

The nutrients, in a nutritionally adequate diet, can be obtained from many sources through a great many different combinations of food both inexpensive and expensive. The most liberal food allowance may not result in an adequate diet. A nutritionally adequate diet can, also, be supplied with very simple foods at low cost. The acceptability of such a diet is either the result of adjustment to it and to the environment in which it occurs or to very skillful attention to mode of preparation and personal preferences.

Nutrient Requirements. Nutrient requirements are physiological factors related to age, sex, size and degree of activity and in special cases the individual. With the exception of calories and the quantities of the vitamin B-Complex the basic nutrient requirements of people are roughly similar. There are some differences between individuals of the same status both as to specific nutritional requirements and actual utilization of the food consumed. Most of these differences are covered when the nutrition allowances of the National Research Council are met in an average diet containing some natural foods. The science of nutrition has advanced to the point where dietary requirements can be prescribed in terms of nutrients which may be obtained in known amounts from a wide variety of natural foods and some from refined and synthetic products. Judgment of a ration or diet must be based on the contribution of the quantities of the various foods present in a day's allowance as well as the kinds of food necessary for reasonably acceptable menus. Dependence upon the presence or absence of foods considered to be important is not sound, and especially if the quantities of foods used are not known. It is practically impossible to select or plan a diet that provides all of the nutrients in the proportions characteristic of the nutritional allowances. This is because most foods contain a number of nutrients and in the process of assuring enough of the nutrient required in the largest amount, as well as to assure enough of the limiting nutrient, an excess of some of the others is provided. A judgment as to the nutritive value of a diet must, therefore, be based on the nutrient that is lowest in amount. There is no method of evaluating or expressing the nutritive value of a diet in terms of one nutrient alone, such as calories or protein, since all nutrients are important and exert different effects on the body. Likewise a judgment based on one type of food, such as "too much starch," is not sound without further review of the diet as a whole and the other meals served in the day.

Nutrition and Therapeutic Treatment. The sciences of nutrition and physiology have advanced sufficiently to evaluate the relative contribution of each of the foods in a food pattern to the nutrient requirements of a person or group of persons and to diagnose nutritional deficiencies and prescribe specific treatment. This has freed the nutritionist and physician from the uncertainty of judging or using a food on the basis of arbitrary quantities or a few characteristic nutrients. It permits them to consider foods in relation to availability, cost, and acceptance as well as the nutritional contribution of the kinds and quantities of the other foods present. Thus, they are able to use particular foods in amounts sufficient to assure a nutritionally adequate food pattern and to correct poor diets within the money available and the food habits of the population. It also assists in determining the adjustments needed to assure the nutritional adequacy of the diet as a whole.

The food administrator and the physician employed in a State agency are in a position to help maintain reasonable food costs by giving careful consideration to the nutritional adequacy of the regular diet provided and the extent to which the addition of expensive foods for patients under treatment is based on physiological or psychological needs. If the former, they should consider whether the patient requires the expensive food or whether simpler and less expensive foods would serve the same purpose. If the need is psychological, it is possible that the desired effects could be attained as well through improved service of food or other forms of attention rather than dependence on special foods in themselves.

In the case of the physician faced with the problem of prescribing food for therapeutic use in institutions, the newer knowledge of nutrition permits him to decide, if necessary, the simplest and most economical method of supplying the additional nutrients required for treatment. He can decide whether it shall be a food or the particular contribution which is made by the food; whether it is for temporary or prolonged treatment; whether it is for a particular nutrient or group of nutrients. In the latter case he has the opportunity to decide whether the use of a food (such as skimmed milk for protein, calcium and riboflavin), or pure nutrients (vitamins, minerals, proteins, amino acids), or a mixture of them, will be more effective and less costly. Such an analysis is especially required in group feeding where the increased cost of a food for a few, applied to the total population, is a matter of considerable public expense and may not be nutritionally justified, except for a small proportion of the population.

An increase, "across the board," in dietary allowances for a population or group beyond the level established by the National Research Council for abundant nutrition is not justified in the light of our present knowledge. The use of food for therapeutic purposes is basically a matter of prescribing for the needs and requirements of an individual. It seldom involves a diet of higher than average caloric content. Patients may require diets that are high protein; low sugar; fat free; salt free; smooth; bland; liquid; semi-liquid. Some elderly patients cannot chew steaks, salads, crusty breads, ready prepared cereals, etc. It is the dietitian's responsibility to take the physician's prescription in terms of particular nutrients and make up a diet that will supply them through acceptable meals. In most cases this can be done with the foods available in the present ration if properly prepared and served.

To appraise the adequacy of the ration of an institution or to determine the nutritional requirements of a particular population, it is necessary to weight the requirements of the various segments of the population to arrive at a representative average. Such weighting must consider not only size, age and sex, but the activity of various proportions of a given category. Thus, a population may be composed of adult men, most of whom are not working or work hard for an hour or two only, or it may be made up of both men and women, of whom a considerable proportion of both sexes work only part of each day. In either case the average food requirement will be different from that for active men, or for men alone, or women alone.

An appraisal of the nutritional adequacy of a given diet can be made on the basis of the total weights of foods selected and consumed from each food group per day in relation to the nutritional contribution of the group to the total nutritive requirement. Such an appraisal is objective since it considers the diet as a whole without undue emphasis upon any particular food which may have a preferred status due to custom or tradition.

The rations established in each of the food controls fully meet the standards set by the National Research Council with allowances for wastage and reasonable losses in preparation and service of food. Unless specifically determined, from the institutional level, the average per capita food consumption of the wards of the State is a good and proper index of the success or failure of operations. This assumption is justified on the further assumption that, with the exception of the more expensive and desirable items of the diet provided, individuals have the opportunity to consume additional energy foods and thus adjust their intake to their needs.

An institution operates on a large pool of foods of various kinds, composed of various nutrients. From this pool is drawn the kinds and amounts of food which meet the needs of a large number of people with varying requirements. The food control fills the pool with food in kind and amount to meet the requirements of the average ward. Individual differences are adjusted by variations in consumption in the wards according to their needs as determined by their age, sex and degree of activity.

Comment: The nutritional allowances of the Food and Nutrition Board of the National Research Council are published in the National Research Council Reprint and Circular Series, Number 129, October, 1948, under the title "Recommended Dietary Allowances, Revised 1948."

The Food and Nutrition Board is a non-governmental body of eminent scientific authorities selected for their knowledge and experience in the field of nutrition and its application in the feeding of people.

CLASSIFICATION OF FOODS BY FOOD GROUPS

The rations in the Food Controls are expressed in terms of specific allowances in pounds of foods to be obtained from specific food groups. The food groups in use are relatively simple classifications of the commonly used foods based on their similarity in nutritive components and customary uses in the diet. In this way, they reduce the considerable number of foods to a comparatively small number of items which are useful in nutritional evaluation as well as nutritional accounting.

Food groups are a useful device in meal planning since they associate foods of like composition and dietary usage which may be used interchangeably to insure variety while at the same time safeguarding good nutrition. For example all meats make roughly the same contribution to our nutritive requirements and are included in one group. When a menu calls for meat one might choose from the group beef, pork, mutton, fish, poultry, rabbit or sausage, but probably not more than one from the group for the same meal. Over a period of days, the differences in composition of the various meats from the group would tend to average out while the different kinds selected from the group would provide desirable variety in the menu.

The foods are grouped according to (a) their similarity in kind or nutritive value, (b) because they are used in large quantitites within a group (such as potatoes in relation to other vegetables), and it is desirable to know the extent to which the remaining members of the group are used, (c) because they are unique in the diet, such as eggs, or (d) make a special contribution to the diet, such as tomatoes and citrus fruit because they are acid and a somewhat sure source of Vitamin C or ascorbic acid. Since the distribution and quantities of individual foods in the major food groups are generally similar, minor variations within the allowances for a food group do not seriously affect the nutritive value of the diet as a whole. One sided diets, made up largely of one food which is lower than the average characteristic of its group, could be inadequate, but this is not the usual practice in institutions and does not occur in any of these Food Controls.

The rations are expressed on the basis of pounds-per-food-group, per-person, per-day. Through this procedure it is possible to compare one nutrition account directly with another because both are reduced to the same measure of quantity and number of individuals, as contrasted to the total quantity of food for two different populations. Unless the population is known comparison is only approximate.

The food allowances of the Food Controls are usually expressed in terms of the number of containers of a specific size and of measures (such as numbers of No. 10 cans, gallons, pounds, or dozens, etc.) per person per quarter. Nutrition accounts expressed on this basis would not be comparable with other data and the amounts would be rather large. Since the foods themselves are commonly bought and used in a variety of sizes and containers as well as in different forms, they are reduced to a common unit of measure and "standard state" and to a basis of per capita usage for comparisons of rations or nutrition accounts. The pound is used as the common denominator for quantity. The "standard state" adopted for each food group is the one in which the largest proportion of the foods within the group are purchased or supplied. Thus, where the largest proportion of meat is purchased as carcass meat it is desirable to reduce all meats to their carcass equivalent through the use of an agreed upon conversion factor. Milk and eggs are exceptions to the use of the state in which a food is used in largest amount, but it is necessary to reduce them to pounds to agree with the other groups.

COMMENT: For conversion factors in common use see the following publications:

Classification of Food and Factors for Conversion of their Packaging Units to Pounds - Howe, Pritchett and Berryman, Journal American Dietitics Association, Vol. 16, No. 7, 1942.

Classification of Foods and Factors for Conversion of Unit Packages to Pounds for Use in Dietary Analysis of Rations - War Department Technical Bulletin, T.B. Med. 25 - 1944; also TM 8-501, Nutrition 1949.

Conversion Factors and Weights and Measures for Agricultural Commodities and Their Products - U.S. Department of Agriculture Production and Marketing Administration, 1947.

Instruction for Preparation of Monthly Dietic Report of Quantities of Costs of Food Used - Veterans' Administration Technical Bulletin TB-104-1174, March 4, 1949.

Food Control, State of California Youth Authority - A Manual of Planning, Supervision, Management, Ordering and Food Preparation - Forestry Camps, October, 1950.

Planning Food for Institutions - Bureau of Human Nutrition and Home Economics, U.S. Department of Agriculture, Agricultural Handbook No. 16, January, 1951.

In general, it is desirable to utilize factors in common use. California agencies, however, should determine the conversion factors applicable to its purposes and adopt a uniform usage.

If most of the meat, fish and poultry is purchased as retail cuts or fillets, this is not so important but the basis of reporting should be stated so that it can be compared with other sets of data. Milk and milk products; syrup, jams and sugars; fresh and canned foods, etc. all require conversion.

COMMENT:

Conversion of Pork. The conversion of fat pork carcasses to the standard state presents a problem because the fat is rendered to lard and used as part of the allowance for "Fats, Other." The conversion factor now in use is 69% carcass and 31% fat with a factor of 75% of the fat as lard or 23.25% of the carcass weight charged as lard under "Fats, Other." These factors are based on experience and may not represent the amount of carcass or lard actually obtained. It is not desirable to change them unless there is a change in the fatness of pork purchased or produced that is known and will be continued. The possibilities of producing pork carcasses with the same weight but less fat, or in other words more meat, on institution farms is discussed elsewhere. Should such a practice be adopted, there is reason to adopt a different set of factors for carcasses and lard.

The accompanying table gives the food group classification used for the rations in the food controls, together with the standard state to which foods are customarily reduced for comparison. There is one exception, the group of leafy, green and yellow vegetables as now used, has been subdivided in my studies into two groups (a) leafy and green, and (b) yellow, as indicated in the attached outline of the"Classification of food into food groups with conversion factors for use in nutrition accounting and dietary analysis".

The conversion factors prescribed are tentative and should be approved or modified by the various departments and agencies and the Agricultural Advisor of the Department of Finance.

CLASSIFICATION OF FOODS INTO FOOD GROUPS - CONVERSION FACTORS FOR USE IN NUTRITION ACCOUNTING AND DIETARY ANALYSIS

The classification of foods into food groups, with factors for the conversion of the various volumes, package sizes and state to a "standard state," is presented as a basis on which to establish and assure uniform procedures in nutritional and financial accounting and dietary analysis.

Note:

The conversion factors are used to convert food into a common unit of measurement or its "standard state." Reference to the Food Control Manual is necessary for exceptional cases. Foods will be listed, in financial Stores and Local Production accounts for transmittal to a Department or Agency, by food groups and in terms of the original container or state. Foods within groups will be arranged in order of similar state, volume, weight or container size to facilitate conversion to pounds and standard state.

Food Groups And Order of Arrangement	Conversion Factors	Standard State to Which Foods are to be Converted for Nutrition Accounts, Dietary Analysis, Comparison and Adjustment
Meat, Fish, Poultry, Rabbits		Carcass Equivalent in Pounds:
Carcass meat and poultry	1.0	Convert retail cuts and non-
Retail cuts	1.2	carcass meat to carcass
Boneless cuts and processed meats	1.4	equivalent in pounds.
(Salt pork and bacon for transfer to Fats other:)		Pork carcasses to be considered 69% carcass and 31% fat, and the fat transferred to Fats Other as based
Fish	1.0	on 23.25% of the carcass
" fillets	1.4	weight.
" canned	1.4	
Eggs		
Fresh eggs - 8 each	1.0	Fresh eggs in pounds: con-
Fresh eggs - dozen	1.5	vert dried and frozen eggs
Dried eggs - pounds	4.0	to fresh egg equivalent in
Frozen eggs - pounds	1.125	pounds.
Milk and Milk Products		Fluid milk equivalent in lbs.
Milk - pint	1.0	Convert all milk products
Fluid milk all kinds including skim milk - gallons	8.625	to pounds of fluid milk equivalent
Cream - gallons	6.8	
Evaporated milk - pounds	1.812	
Dried milk all kinds - pounds 38	8.0	
Cheeses - hard - pounds	7.0	
Cottage and soft cheeses - pounds	5.6	
Ice cream - gallons	3.75	
" " - dry mix - pounds	2.68	
(1 - 7 pound can = 9.375 pound)		

Fats, Butter and Oleomargarine	1.0	Pounds
Fats, Other (than butter or oleomargarine)		Fat equivalent in pounds: Convert oils, salt pork, bacon and trimming fat to their fat equivalent in pounds.
Lard and compounds, pounds	1.0	
Fat, unrendered, pounds	.75	
Bacon, pounds	.66	
Salt pork, pounds	.83	
Oils, gallons	7.688	
Grain Products (Flour Bread and Pastes)	1.0	Flour or grain equivalent in pounds: Convert bread to pounds flour equivalent and other packaged cereals and flour to pounds.
Bread, pounds	.67	
Legumes, dry beans		Legumes dry: Convert peanut butter pounds to dry legume equivalent.
Beans	1.0	
Peanut butter	1.5	
Sugar, syrup and jams		Sugar equivalent in pounds: Convert syrup, jams and other sweets to their sugar equivalent in pounds.
Sugars, pounds	1.0	
Syrups, gallon	8.0	
Molasses, gallon	7.0	
Jelly and Jam #10 can	5.47	
Jelly pounds	.64	
Gelatine, flavored	.89	
Honey, gallon	8.8	
Green and leafy vegetables, pound		All vegetables and fruits, in pounds: Convert all vegetables and fruit to the approximate pound equivalent of fresh vegetables and fruit as sold in retail.
Fresh, pounds	1.0	
Canned #10 can	6.5	
Yellow vegetables		As above for green and leafy vegetables
(Conversion as for green and leafy vegetables)		
Tomatoes and Tomato products		As above for green and leafy vegetables
Fresh	1.0	
Canned tomatoes, #10	7.0	
Juice #10	9.0	
Juice #5	4.7	
Juice #3	4.1	
Juice #2-1/2	2.5	
Catsup #10	14.0	

Citrus Fruit Conversions as above except juice as follows: Juice - Gallon 21.4 " #3 (46 oz.) citrus 8	As above for green and leafy vegetables: Convert dehydrated concentrated and frozen products to pounds of the fresh fruit equivalent. (crates as follows): oranges - 200s; 75 pounds grapefruit - 80; 67 pounds lemons - 360s; 75 pounds
Potatoes (and sweet potatoes)	As above for green and leafy vegetables
Other vegetables (than green and leafy, yellow and potatoes)	As above for green and leafy vegetables
Other fruits (than citrus and dried fruits)	As above for green and leafy vegetables and citrus fruit
Fruits dried	Fruits dried in pounds Convert nuggets to their dried equivalent in pounds (by multiplying by 2.5; apples 3.0) For adjustment between dried and fresh fruit equivalent convert dried fruits to fresh fruit equivalent by mutiplying by 2.5.
Beverages	Beverages in pounds
Leavening Agents	Leavening Agents in pounds
Miscellaneous	Miscellaneous, in money They make minor contributions to the nutritive value of the diet and hence do not justify either subgrouping or conversion.

The following factors may be used where they are applicable and approximately correct unless the actual weight is known.

Beets - sack	50 pounds
Carrots "	50 "
Cauliflower - crate	47 "
Celery - crate	45 "
Corn - dozen	8 "
Cucumbers - lug	25 "
Endive - crate	40 "
Lettuce - crate	60 "
Onions, dry - sack	50 "
Onions, green, dry bunches	6 "
Parsley " "	2 "
Radishes " "	4 "
Squash, lug	30 "
Tomatoes, lug	30 "
Apples, box	44 "
Oranges, box	76 "
Grapefruit, box	67 "
Lemons, box	75 "

DISCUSSION OF FOOD GROUPING

The classification of food used in California consists of 19 food groups as seen in the table. The need for subdividing foods into so many groups may be questioned. The following discussion relates to the reasons for the subdivision, in terms of the nutritive values involved, both as justification for subdivision and for use in evaluating the significance of a change in the quantity of a group used in the ration, and for modifications.

Meat (poultry, fish, rabbit); Milk and Milk Products; Eggs The first three groups consist of animal foods or products. They are sources of protein of good quality, excellent sources of vitamins and minerals and fats. The quality of the protein is roughly the same. They can each be divided into portions containing the predominance of fat: external fat, suet or lard, from meat; butter, from milk; and the yolk of the eggs. The unique characteristic of animal products is their protein and associated nutrients. Each form of animal food contains calcium (bones of animals, calcium in skim milk, shells of eggs) and phosphorus; the phosphorus of eggs is in the yolk. Iron is present in the lean of meat and the yolk of the egg; it is very low in milk. The water soluble vitamins of the vitamin B-complex and vitamin A are present in varying amounts. Milk alone contains a considerable amount of carbohydrate in the lactose. The energy value of these foods, per unit weight, is determined chiefly from the quantity of fat present, because the protein from which energy might be obtained is associated with about 72% water in meat, 80% in milk and 87 and 70% respectively in egg white and yolk. The contribution of these foods to the general nutritive content of the rations has been presented in the previous discussion.

Substitutions between animal foods. Substitution may be made between meat, eggs and milk on the basis of both nutritive value and use in the diet. The chief precaution is that the use of milk and milk products should not be reduced below a level that will assure one gram of calcium per day and that the riboflavin content is not lowered too far. There are certain practical considerations in relation to the use of meat, milk and eggs and the acceptability of the diet. The meat should not be reduced below 0.3 pound carcass weight equivalent nor the eggs 0.06 pound per person per day, except in the hands of exceptional cooks and unusual surroundings.

Approximately one-half pound of carcass meat (meat, fish, poultry and rabbit) or its equivalent in retail or processed meats is sufficient nutritionally for all types of rations with suitable attention to preparation and equitable distribution and service. An allowance of 0.3 pound carcass meat per person per day would give approximately a 2.5 ounce serving of cooked meat once a day or the equivalent of a moderate size hamburger, or a portion of meat pie, or slice of meat loaf or an extender dish such as spaghetti with meat sauce. The 0.06 pound of egg per person per day is slightly more than 3 standard 2 ounce eggs a week. This permits the use of some eggs in preparing food and if properly handled an occasional egg for breakfast.

The quantity of milk, fluid milk or its equivalent in cheese, evaporated or dried skim or whole milk, required for an institution varies with the age and sex and condition of its population. The nutrition allowances of the National Research Council provide somewhat higher requirements for the adolescent, rapidly growing, boy or girl than for adults or the workingman. Additional milk is traditionally used in hospital feeding for convenience. The use of milk or its products beyond their unique contribution to an adequate diet as a source of calcium and riboflavin places it in competition with meats and eggs, primarily as a source of protein and energy. Milk is less valuable than meat or eggs weight for weight as a source of protein, the vitamins of the B-complex, or iron. The normal use of enriched bread or flour removes in part the advantage of meat, milk and eggs as a source of some of the vitamin B-complex and iron. The decision as to the use of the animal products beyond the amount required for a nutritionally adequate diet is one of increased pleasure and interest in the meals and of cost.

The animal foods are both expensive and palatable. As a matter of policy, therefore, when an institution desires to modify its diet between meat, milk and eggs, or produces more of these foods than is provided in the Food Control and should reduce meat or eggs, the question is one of acceptability and cost and should be adjusted within the cost of the three groups in the Food Control. In the case of milk and eggs, beyond a moderate seasonal excess, there should be an automatic and accountable reduction in meat and/or eggs. Where an institution is using milk beyond the quantity justified in relation to nutritional requirements the decision rests upon the relative acceptability of the food under consideration and adherence to custom. Reduction of meat is a psychological problem and reduction beyond 0.3 pound carcass weight equivalent creates problems of satisfaction. Reduction in the use of eggs beyond 0.06 pound, as indicated above, makes the preparation of acceptable meals difficult. Reduction in the use of milk is related more to its use as a drink than its use in food preparation. The public has been indoctrinated to the use of a "quart of milk a day" for growing children and young people and to drink it rather than to eat it as cheese or combined with other foods. The "quart of milk a day" is not a literal quart but the equivalent of a quart in milk or milk products. There is need to use cheese to provide variety in the meals in institutions and to use dried skim milk for economy and convenience in baking or as a beverage, flavored or unflavored; the important nutritive value of milk required in an institution in relation to the other foods of the Food Control is contained in the non fat milk solids (skim milk).

Reduction in the quantity of fluid milk served as a drink in an institution, especially those of the Youth Authority, should be accompanied by assurance and evidence of the utilization of sufficient milk and milk products to maintain the dietary requirements. The administrative staff of the institutions should also be shown that when sufficient milk or its products is used it is not necessary to serve more fluid milk than is necessary to complete the dietary needs, and that they have an obligation to safeguard the interests of the State through adjustment of the use of animal foods in relation to cost and the effective use of the foods.

Meats (fish, poultry, rabbit). Meats are separated from other animal foods because of the place they occupy in the menu, the importance they have in the minds of people with regard to satisfaction as well as their general contribution to

an adequate diet. The primary interest in meat is in the lean with enough fat to give it quality, tenderness and richness of juice. The interest of the consumer in the fat is in the fat which occurs in the lean. After the grade reaches choice, under the present grading (good in the former grades) the probability that additional fat will result in improved quality is relatively small. For institutional use the primary interest is in the lean for its nutritive value and the flavor it contributes to other foods. The nutritive value, aside from caloric (fat) content is essentially the same in all grades of meat. The quantity of the Good, Choice and Prime grades of meats marketed is relatively less than of Commercial and Utility. The methods of preparation of meat in institutions are adapted to the use of the Utility and Commercial grades of meat.

The choice between Utility and Commercial grade should be in relation to cost of usable meat. With the normal spread in price of carcasses this usually means Utility grade. In general there should not be a change in grade where the higher grade has only a slight advantage over the lower unless it is decided to continue use of the higher grade. This is because a population reacts to a decrease in grade, even though they would have difficulty in detecting the difference in the character of the average meal due to the usual variation in quality within any grade of meat.

Milk and Milk Products. Milk and milk products, other than butter, are classed separately because of the use of milk as a beverage, the quantity in which fresh milk is used in the ration in relation to meat and eggs, and the particular contribution they make to the calcium and riboflavin content of the total diet.

There may be considerable variation in the proportions in which milk and its products (fresh whole or skim milk, dried whole or skim milk, evaporated milk or cheeses) are used before the nutritive value of the ration as a whole will be affected. The major difference in nutritive value of whole and skim milk is in the fat and the vitamin A of the fat.

Eggs. Eggs are separated from meat and milk because of the place they occupy in many breakfasts and for their varied use in the preparation of other foods. It is important in evaluating the acceptability of a ration to have evidence on the quantity of eggs used.

Modern processing is producing dried and frozen eggs which are entirely satisfactory for use in preparation of food. Like the dried milk products, in special cases they are more convenient to use in food preparation than fresh eggs. Fresh eggs deteriorate in quality from the time they are laid and require refrigeration to retard the rate of deterioration. There is a place for eggs as eggs in the shell, for use when served as such. In general the use of dried or frozen eggs is justified on the basis of cost of shell eggs in relation to the quality desired.

Fats -- Butter, Oleomargarine and Other Fats. The two groups of fats, butter or oleomargarine and the "other fats" are nutritionally important for their fat as a source of energy. Butter and fortified oleomargarine are important for the vitamin A which they contain. Both groups of fat are used in the preparation of food with relatively the same effects, except flavor. Butter and oleomargarine

are particularly interesting as a spread on bread and to add richness and texture or flavor to vegetables. In the latter case they are in competition with other fats and oils. Their use is determined in both cases in part by habit and custom. It is the direct use of butter and oleomargarine as a spread combined with the presence of vitamin A which makes it desirable to separate them from the "other fats" in a classification. The separation permits a measure of the extent to which such a spread is provided.

There are essential fat acids in the fats that are necessary in the diet. They are contained in liquid plant oils and in the whole grain products and leafy vegetables in sufficient amount in the average diet to meet the needs of the body. The quantity in butter and animal fats is related to the nature of the animal's diet since the animals do not form them.

The quantity of fat required for nutrition is probably less than the amount that is required to prepare satisfactory meals and that used in connection with the consumption of the bread. A large excess of fat is not tolerated. Experience has shown that the quantity of edible fats, butter and oleomargarine required is between 0.04 and 0.05 pound, plus the 0.05 to 0.10 pound of other fats per day, purchased as fat. In normal operations additional fat is obtained from meat.

Margarine and Butter. The nutritive value of fortified oleomargarine and butter are essentially the same. The quantity of vitamin A in butter is likely to be more variable over a year because of the differences in the quantity of carotene (the precursor of vitamin A) present in relation to season. It is generally higher in the green forages consumed by cows when the forage is fresh than in the dry forages of the dry season. The flavor, spreading ability and texture of modern oleomargarine are satisfactory. A recent action of the California Legislature, Chapter 572, Section 656 of the Agricultural Code, permits the use of colored oleomargarine in institutions and removes a common objection to oloemargarine. Butter fat, if it is considered important, is provided in the ample quantities of whole milk in the Food Control. The question of use of butter or margarine is basically one of cost and attitude. Since considerable savings can be made by use of oleomargarine its use should be based on cost when colored margarine can be purchased.

Sugars. The sugars include the various kinds of sugar and other foods containing a large proportion of sugar, such as the jams, jellies, syrups, molasses, honey and sweetened dessert powders. In the latter case they are converted to their equivalent approximate sugar content to reduce them to a standard state. This is desirable particularly because of the fairly high water content.

Sugars in general are nutritionally important only for their energy content and like the fats supply little else, with the exception of vitamin A in butter and oleomargarine. It is this fact which has led to objections to the overuse of sugars and sweetenings. Their overuse results in a lowered intake of the materials associated with the carbohydrates in natural foods. Unless these nutrients are supplied in sufficient amount by the other foods the total nutritive value of the diet is lowered beyond desired levels. The value of sugars in relation to nutrition is to stimulate and assure the consumption of other foods. The so-called quick energy value of sugars is not important in most

diets since the starches of the grains are rapidly digested and begin to become available a few minutes after consumption. They continue to be available for some time afterwards and longer than readily absorbable sugars which, if taken in large amounts are, in part, excreted unchanged. The jams and jellies as well as honey and molasses contain other nutrients, but these foods are used in such small amounts that they are relatively unimportant.

The question of what constitutes a reasonable amount of sugar and foods classified with sugars is one that is met in various ways:

a) The amount of sugar required to prepare the standard portions of desserts, fruits, and baked foods, and for sweetening cereals, coffee and tea in a planned basic menu pattern.

b) The average use of sugars and sweetening.

Both sources of data are related to experience and habit. They are subject to considerable variation. Habit can be modified through experience, by gradual adjustment of a recipe or by the availability of sugar within the day-to-day operation of an institution. The use of sugar beyond average experience is a question of both cost and nutrition. Some data on sugar usage follow:

Sugar	Pounds per Person per Day
U.S. Veterans Bureau, officers and patients	.213
San Francisco food consumption studies BHNHE	.125 - .155
Medium Cost Diet, BHNHE	.126
Moderate Cost Diet, Physically Active Man, BHNHE	.18
New York, T.B. Hospital, 1951	.114 - .172
New York, Mental Hospitals, 1951	.156
Employees ration, California institutions	.204 - .243
Veterans Affairs, California	.257
Mental Hygiene, Workers, California	.203

Grain Products. The grain products include the various types of cereals and products made from them such as macaroni, spaghetti, dried hominy grits, as well as flour. Bread is also included under this heading. In order to make it comparable with flour it is converted to the flour equivalent. These foods supply a considerable or a large proportion of all nutrients, except vitamin A and ascorbic acid or vitamin C, especially when they are in the form of lightly milled or whole grain products or have been enriched. The vitamins particularly

concerned with the use of carbohydrate in the body are contained in whole or slightly milled grain products or are added to enriched flour. Hence, an increased use of grain products, except the highly milled products, such as starches, pastes and high extraction flour and unenriched bread, does not require the special review of the adequacy of the diet as it does in the cases of an increase in sugars and fats.

The grain products, together with potatoes, are the foundation of all diets. They are the "filler" with which to satisfy the need for energy after sufficient other foods have been eaten to cover the protein requirement and enough vegetables to supply vitamins A and C. The leafy green vegetables supply some protein to supplement the proteins of grains.

Legumes, Dry, or Beans, etc. Dry legumes (beans) occupy an intermediate position between the animal and vegetable products in the menu. Because of their use and the relatively high protein content of the dried bean they are accepted and used as a "meat substitute." In amino acid composition they, together with the leafy vegetable, are fair supplements to the proteins of the grains in the quantities eaten where they appear as the main dish; this is especially true of soya beans. The biological value of the proteins is fairly high.

The customary use of beans in the menu, as well as their nutritive value, justifies their separation from the grain products. Such a separation also enables an estimate of the probable satisfaction of the diet in relation to the food habits of the population. There are ethnic and regional food habits which are characterized by a liberal use of the dried legumes. In such cases the consumption may be as high as 0.3 - .4 of a pound of dried beans per person per day, with entire satisfaction and grumbling if it is not maintained. Such diets are sometimes described as containing "too much starch." This is an evaluation of one food habit against another rather than a nutritional evaluation.

Vegetables and Fruits. The vegetables and fruits may be divided into two general classes on the basis of their contribution to the nutritive value of the diet: leafy, green and yellow vegetables; and all other fruits and vegetables. This distinction is made because the leafy, green and yellow vegetables contribute considerably larger amounts of certain nutrients such as protein, iron, calcium and vitamins, particularly carotene (the yellow pigment which is the precursor of vitamin A in the body) than do the others. The yellow vegetables are roughly similar to the other vegetables except that they contain a fairly high proportion of carotene. Tomatoes belong with the leafy green and yellow vegetables as a source of carotene. They are separated because they are a good source of vitamin C, and are used in many ways in the preparation of food for their flavor and color. The rest of the vegetables and fruits are nutritionally important for their vitamin C or ascorbic acid. For some people the bulk provided by vegetables is of importance, although the quantities of whole grain products and milk used in the food controls provide considerable bulk. The fruits are attractive, palatable foods which add much to the enjoyment of meals.

Fruits and vegetables have some reasons other than nutritive value, for their subdivision as follows:

a) Leafy and green vegetables: Inherent nutritive value. There is sufficient difference between the contribution of the leaves and especially green leaves to the nutritive requirement to justify their separation from the yellow vegetables. This group includes lettuce and cabbage which are used raw in salads.

b) Yellow vegetables: For their contribution to the vitamin A requirement and color.

c) Tomatoes and tomato products: Because they are acid, a fairly sure source of ascorbic acid (vitamin C) add color, texture and flavor in cooking.

d) Citrus fruit: Because, like tomatoes, it is a fairly sure source of ascorbic acid both because it is acid and is eaten without cooking.

e) Potatoes: Because they often form such a large proportion of the vegetables used in the diet, and if included with others would distort the picture. In addition potatoes have a particular place in the menu in relation to meat which is not characteristic of the other vegetables. Rice and hominy grits play a somewhat similar role which has led to their designation as "vegetables."

Comment: The use of the word "vegetable" in relation to grains or grain products is unfortunate, in light of our knowledge of nutrition. The word now carries an implication that a food is one of the succulent vegetables which usually contain at least ascorbic acid. Rice and hominy, and the dried beans, which are also included under vegetables, contain practically no ascorbic acid.

Both white or Irish potatoes and sweet potatoes are classed under potato because of their dietary use. Sweet potatoes, if they are distinctly yellow, are good sources of carotene and vitamin A. They may properly be grouped under yellow vegetables, but it is preferable to keep them with the potatoes. Should there be indications that a ration or diet is low in carotene it would be desirable to review it in relation to the extent to which sweet potatoes are contemplated or used. Such a review might also require a review of the particular kinds of yellow vegetables and fruits present.

Potatoes contribute a number of nutrients other than starch, and because they are eaten in such large quantities the importance of their contribution is greater than might be expected. For example, they contribute a considerable amount of protein, which is of fairly good quality, and has a supplementing value to grain proteins.

f) Other Vegetables. The "other vegetables" include all vegetables not included in the other groups.

Comment: Dried and dehydrated vegetables. The dried and dehydrated vegetables available, unless they are specially handled, processed and sealed against air, have lost much or most of their ascorbic acid and carotene. Even when well protected their vitamin content deteriorates gradually in storage and if not protected against oxidation most of these nutrients are lost within a year. Deterioration is accelerated at high temperatures. Dried leafy green vegetables are still good sources of protein and minerals and all dried or dehydrated products that can be reconstituted satisfactorily have a place in the menu, but the nutritional value of the diet as a whole requires careful review to make sure that their actual contribution of nutrients was considered and their use did not result in an inadequate diet.

g) Other Fruits. The "Other Fruits" are all other fresh or canned fruits other than citrus fruit and dried fruits.

h) Dried Fruits. The dried fruits are separated from "Other Fruits" for two reasons: the difference in composition because of removal of water in drying and some loss of vitamins. Apricots, peaches and prunes contain considerable amounts of the precursor of vitamin A, particularly the apricots.

Dehydrated nuggets contain even less water than the usual dried fruit and hence have a higher nutritive value as purchased. They reconstitute to better advantage and have a variety of uses that cannot as easily be attained with the usual dried fruit. They require conversion to their dried fruit equivalent in nutritional accounts.

Comment: Frozen Fruits and Vegetables. Properly frozen and stored fruits and vegetables approximate both the quality and nutritive value of the fresh product. They deteriorate if not properly handled and should not be held too long or refrozen after they are thawed.

Beverages. Beverages include coffee, tea and cocoa, because of their use in the menu rather than nutritive value. Coffee and tea contain small but unimportant amounts of vitamins. Chocolate is usually included in miscellaneous foods. Its placement is difficult. In special cases it is necessary to review the use of the various beverages separately because of their importance in relation to a particular group of people.

Leavening Agents. The leavening agents, baking powder, soda, cream of tartar and yeast are grouped because of their use in food preparation. Yeast when used in sufficient quantity will make a recognizable contribution to the nutritive value of the diet, but in most cases it is used primarily in baking.

Miscellaneous. The spices, extracts, vinegar are grouped under the classification miscellaneous under all the food allowances to complete the record of food included in food controls. Their contribution to the nutritive value of the

food ration is negligible. There is no reason, therefore, for reducing them to a standard state or weight. A record of per capita cost is sufficient.

There are occasions when a review of the quantities of spices and other miscellaneous foods is justified with regard to nutrient content, because some of them contain considerable quantities of nutrients and make a significant contribution to the diet when used in relatively large amounts.

Relative Nutritive Values of Food Groups. The following discussion relates to the relative nutritive value of the food groups and their use in the diet. It is presented in relation to the possibilities of substitution or modification of the quantities of food in the food allowances in relation to the diet as a whole, as well as to an understanding and use of the food groups.

The daily diet is made up of a number of foods each of which contributes to satisfaction, in general, and to nutrition, in particular. Both satisfaction and nutrition are influenced by the quantity of food eaten, while the nutritive value of the diet is influenced by the inherent nutrient content of the food as well. It is possible to obtain an adequate diet with relatively large amounts of a few foods or smaller amounts of a large variety of foods. The grains and their products, such as bread, potatoes and other vegetables constitute the bulk of the diets of most people. This is because they are relatively low in cost, bland in flavor, and combine well with the more flavorful foods. Thus, they can be eaten in sufficient quantities to satisfy the appetite.

An examination of the contribution of the various foods to the total nutrient intake of people shows that the grain products are the source of a considerable proportion of most of the nutrients with the exception of Vitamin A and ascorbic acid or Vitamin C. The leafy, green and yellow vegetables supply moderate amounts of most nutrients, but are particularly important as a source of Vitamin A (or carotene, the yellow pigment from which the body makes Vitamin A) and ascorbic acid. These vegetables also have a good protein, calcium and iron as well as traces of a number of nutrients with which we are less familiar. Meat, milk, and eggs, the animal foods, are major sources of protein and the vitamins of the Vitamin B-Complex. Milk contributes, in our diets, the largest proportion of calcium and riboflavin, whereas meat contributes a considerable proportion of protein, fat, iron and niacin; they are good supplements to the basic foods.

It is possible, however, to obtain a nutritionally adequate diet without meat, milk or eggs, although it is more difficult to do so. Assurance that a diet containing no animal foods is nutritionally adequate requires careful review of the diet as a whole.

The relative percentage contributions of the different food groups used in institutions to the total nutritive content of the rations are indicated in the accompanying table. In this table the food groups are rated from 1 to 6. Where two food groups make approximately the same percentage contributions they are given the same number with a letter. The ratings 1 to 3 are fairly consistent for a number of food patterns although in diets high in milk and low in meat the ratings for meat and milk will be reversed especially with respect to protein and thiamine. Likewise, the rating of the fruits and vegetables in relation to Vitamin C, or ascorbic acid, content will be altered in the case of a considerably higher consumption of one or the other of these groups.

RATINGS OF FOOD GROUPS IN THE ORDER OF THE RELATIVE IMPORTANCE OF THEIR CONTRIBUTION TO THE TOTAL NUTRIENT CONTENT OF THE RATION

(1 highest contribution to 6 lowest)

(Most foods, except sugars and refined fats, contribute small amounts of a number of nutrients. The ratings are based on the percentage contribution of a food group to the total quantity of nutrients provided in the ration. Where letters are associated with the numbers they indicate that the contribution of the groups of the same number are approximately the same. The higher numbers include groups in some cases that may provide as low as 2 per cent of the total nutrients. Ratings 1 to 3 indicate that the contribution is of the order of 10 per cent or more, except in the case of calcium and Vitamin A when 2 and/or 3 are of the order of 7 per cent, because milk and the leafy green vegetables, respectively, make such a large contribution.

	Nutrients						Vitamins				
Food Group	Calories	Protein	Fat	Carbohydrate	Calcium	Iron	A	Thiamine	Riboflavin	Niacin	Ascorbic Acid
Meats	2	1	1	-	5a	2	-	2	2a	1	-
Eggs	-	5a	5	-	5b	5a	5	-	3a	4a	-
Milk, etc.	3	3	2a	3a	1	-	2	3a	1	-	-
Fats, Butter, Oleo.	5a	-	3	-	-	-	3	-	-	-	-
Fats, cooking	5b	-	2b	-	-	-	-	-	-	-	-
Grains, etc.	1	2	4	1	2	1	-	1	2b	2	-
Legumes, dry	-	4	6	4a	4a	3a	-	4a	4a	4b	-
Sugars, etc.	4	-	-	2	-	-	-	-	-	-	-
Green, leafy, vegetables	-	5b	-	4b	3	3b	1	4b	3b	4b	1
Tomatoes, etc.	-	-	-	-	-	-	4a	-	-	-	4a
Citrus fruit	-	-	-	-	-	-	-	-	-	-	2
Potatoes	6	6	-	3b	-	4	-	3b	4b	3	3
Other Veg.	-	-	-	4c	4b	5b	-	-	3c	-	4b
Other Fruits	-	-	-	-	-	-	-	-	-	-	-
Fruits, dried	-	-	-	4d	5c	5c	4b	-	-	4d	-

The relative contribution of the weights of food in the various groups to the nutritive content of a diet is important in reviewing nutritional accounts. The ratings provide a means of judging the effect of a failure to use as much food as planned or the possible variation in the quantity of food in a group. In all cases it is important to consider the effect of the change in relation to the total diet and possible simultaneous changes in other groups. Some examples will illustrate the problem:

a) Potatoes have a rather low rating even though used in considerable quantities. Should the quantity of potatoes be markedly increased--say doubled--they would make a much more important contribution to the protein, carbohydrate, thiamine, riboflavin, niacin and vitamin C content of the diet than they do in the present ration, but they would have practically no influence on the fat, calcium or vitamin A content of the diet.

b) Milk is another food that is important in the ration because it is used in the largest amount of any of the foods. A reduction in milk or milk products would affect chiefly the calcium and riboflavin content of the diet because of the very large proportion of these nutrients supplied by it. The influence of such a reduction on protein, vitamin A and ascorbic acid might not be great, especially if the reduction were only moderate, and the meat and eggs were maintained at customary protein levels.

c) The importance of the leafy green and yellow vegetables has been mentioned. They are used in fairly large amounts and their contribution to the vitamin A and ascorbic acid content of the diet is large; a marked reduction in these vegetables might be serious in relation to these vitamins but not to others.

d) The contribution of the fruits and vegetables to the diet is related primarily to vitamin C and they are relatively interchangeable except with the green and leafy or yellow vegetables. The contribution of the dried fruit to calcium, iron and vitamin A indicated is due to their concentration and the rather large quantities included in some of the rations; the vitamin A rating is chiefly due to the proportion of apricots present.

Nutritional Accounting. Nutritional accounting is a method of keeping and reporting food usage in relation to food costs so that the resulting financial records can be used to appraise the nutritional and financial success of any communal feeding operation. The essential feature of a nutritional account is the per capita use by weights of groups of food in terms of food groups (see discussion of food groups) during a given period of time, such as a month, in relation to the money spent for these groups. A nutrition account is (a) evidence of the successful discharge of an administrator's responsibilities, (b) a basis for a nutritional and financial appraisal of the operation, and (c) justification for requests for necessary financial support. Nutritional accounts are a necessary tool in the operational procedures of a food control program for these reasons:

a) Its use gives the resident population of an institution confidence in the administrator and objective assurance of the adequacy of its diet.

b) It supplies the appropriating agency direct evidence of the proper expenditure of its funds.

c) It enables the operating unit to plan its program of purchasing, local production, use of donated food, preparation and service of food; it furnishes proof of the success of its operations.

d) It, combined with food allowances, gives the operating employees a common ground for evaluating their operations; and to take pride in them; it tends to eliminate petty arguments and jealousies.

e) It, together with food allowances, furnishes data on food consumption or usage in pounds and food equivalents, for the use of architectural designers in planning equipment, area and space required for the storage, preparation and service of food.

f) It justifies changes in food cost by tying cost to the nutritional needs of the population.

Nutrition accounts based on the food bought, produced and used in an institution are the simplest and first record available on its operations in the relation to feeding of people. They are interpretable, nutrition-wise, in terms of what people can or should eat and their capacity to eat; and they are a general indication of the acceptability of the menus that can be prepared from the foods supplied. The nutrition account (which is actual usage) of food and money expended for food is comparable with the ration or food control established, as well as with the per capita cost of the various groups of food obtained from the pricing of the ration by food groups.

Where a nutritional evaluation has been made of the ration, the nutrition account becomes the basis of evaluation of the diet supplied through the comparison of the weights of the various food groups used with those planned. The relative contribution of each food group to the total nutrient content of the particular diet, as compared with established nutritional allowances, permits a rough approximation of the effect of the over or under use of a particular food group and

indicates the adjustments in it or in other groups as the result of such use. It is possible to obtain a nutritionally adequate diet in many ways; hence the failure to adhere exactly to a particular food pattern, such as a ration, is not evidence, per se, that the diet is either inadequate or unacceptable.

The ability of the administrator to evaluate his operations through the use of nutrition accounts, in relation to foods available or produced, frees him, in special cases from the rigidity of the ration itself. The nutrition account of his actual operations under such circumstances is his evidence that he was or was not remiss in making the change.

The nutrition account is a means of reducing the multiplicity of lists of foods in kinds and amounts used and misused by people of variable capacities, to a relatively simple set of figures in a form that is interpretable and can be checked. It shows whether the food has been properly used, and has supplied the character of diet intended.

The nutrition account is not a perfect record; it has errors inherent in the handling of data and others due to the number of items of different size and state characteristic of the purchase and distribution of food. Many of the errors are correctable and detectable. The account is also subject to falsification which is difficult to detect. But, by the same token, it is the means of detecting improper or misuse of food, especially where the accounts are prepared regularly and kept available for review and comparison over a period of time or with other accounts. This is true because institutions tend to follow the same pattern of distribution of quantities of food in each group. Deviations are thus significant. Likewise, if the food pattern is not in agreement with general practice in other institutions of a similar nature the differences are important enough for review and study. If they represent what was actually done and the diet is nutritionally adequate there may be no need for change. If, however, the difference is not good practice, the account gives the basis for action since, if the diet is not adequate, the data indicates the change needed.

The nutrition account is the first step in providing interpretable evidence on food and nutrition in finance and administration. As previously indicated, when associated with financial accounts it furnishes evidence of the discharge of the administrator's responsibility to provide an adequate diet. If the diet of an institution is found to be inadequate the inadequacy is due to:

a) Failure to supply sufficient money or facilities to purchase or produce the food necessary to provide nutritious, palatable food and satisfactory service.

b) Unsound or inefficient expenditures of money and/or purchase and preparation of foods of the wrong kinds and amounts with the consequent development of malnutrition among the inmates.

The nutrition account furnishes evidence to an appropriating body of the extent to which it has provided the money, personnel and equipment needed to prepare and serve food planned for adequacy, palatability, and reasonable cost. An administrator cannot effectively appeal to an appropriating body for relief from an insufficient

budget without an interpretable record of the kinds and amounts of foods available and used and whether it was possible to provide a nutritionally adequate, palatable diet. The nutrition account is the simplest statement of food used that is interpretable both as to food and nutrition. Conversely, with such records, the operations of an agency can be reviewed and if correct and they are approved, the action of the appropriating body becomes the public policy with regard to the adequacy and character of the diets of its charges, and in such action assumes the responsibility for basic planning, allotment of money and review of operations.

The policy of the State of California as expressed in the operations of the Department of Finance and the various agencies of the State is to provide sufficient money to feed its wards a nutritionally adequate, wholesome diet. The nutrition accounts furnish, in this case, the evidence that the policy is carried out at the institutional level.

The preparation of a nutrition account requires:

a) The listing of foods in the final report of financial accounts according to a uniform set of food groups based on:

(1) similarity in nutritive value, or

(2) because a food or group of foods:

(a) is normally used in such large amounts that the quantity is important in itself or would mask the use of other members of the group;

(b) when used in quantities beyond a certain amount in the diet, is unacceptable;

(c) occupies a unique place in the diet.

b) The reduction of all foods to a common basis of weight and "standard state."

Comment:

Weight should be in pounds and food in the following state in Food Controls: meats, carcass equivalent; eggs, fresh equivalent of dried and frozen; milk, fluid milk equivalent of dried and evaporated milk, cheese, ice cream, etc.; other fats than butter, fat equivalent of salt pork and bacon; sugars, syrups, and jams, sugar equivalent of syrups and jams; grain products, flour equivalent of bread; legumes (dried), bean equivalent of peanut butter; vegetables and fruits, fresh equivalent of dehydrated, canned, frozen, juices; fruits (dried) dried equivalent of nuggets.

Conversions are facilitated if similar types of containers or state of food are kept together in the accounts so that they can be totaled and the conversion factor applied to the group rather than used individually.

A more detailed discussion of food classification and grouping is contained in "Classification of Food by Group.

c) A record of the total number of persons fed during the time the food reported is used. The record may be either the total population, including the officers, culinary personnel and wards if they eat regularly, or the meal count if there are persons who do not eat regularly. The meal count is then reduced to man-days for the period.

If a further analysis of the nutritive value of a nutrition account, beyond the comparison with a standard ration or food pattern, is needed the next refinement is to calculate the nutrient content. For this a table of the nutrient content of the food groups is used, rather than detailed calculations of the nutrient content of the quantity of each of the foods used. Such tables of weighted average composition are available for characteristic food patterns of populations, communities or institutions. If the pattern followed is approximately that of a particular nutrition account or food pattern it may be used with a fair degree of assurance that the results are representative of the operation. Where the distribution of foods in one or two important groups is known to be different from the account under consideration, it may be necessary to calculate the nutritive value of these groups. If there is a likelihood that the account will need to be examined again, it is good practice to prepare a new set of data by summing the weights of the foods in a group as well as the calculated nutrients. The total quantities of nutrients found are then divided by the total weight of the foods used in a group. The result is the weighted average for future computations under similar circumstances.

The significance of data obtained with the weighted average values for food groups, as well as the per capita weights of food groups characteristic of nutritional accounts, is sometimes questioned. Both sets of data represent average experience with average foods and people. The nutritional account carries the errors of record and use, the weighted average nutrient content of food groups carries the errors of weighting as well as the variation in composition of the same food in relation to the tables of food composition. When these measurements of food and nutrition are applied to the operation of a large institution over a period as long as a week or a month, the probability is that the errors described above are smoothed out to a considerable degree. If the results indicate that a diet failed to meet a rather high standard, such as the nutritional allowances of the National Research Council, a further review of the operations is justified. Action on minor variations is, however, not justified, especially if they involve meticulou corrections.

Deviations in the weight of a food group in the nutrition account in relation to a ration or previous experience is fairly significant and justifies further study of the record and necessary operations.

Nutrition accounts have been successfully used by the Veterans Affairs to adjust its formal ration to the quantities of food actually used to serve satisfactory meals to its member population. They are also a part of the records of prison road camps (Prison Road Camps, reprint of a series of articles from California Highways and Public Works, State of California, Department of Public Works, Division of Highway), and the Department of Corrections. They are used by the Food Administrator of the Youth Authority but are not at present required to be prepared by its institutions or camps.

Acceptability of Meals. The food controls contain a sufficient variety of foods to prepare reasonably satisfactory meals. In addition there must be personnel with sufficient originality and ability to make the most of the food and the facilities available for its preparation. The attainment of satisfaction is a compromise between the food available, the imagination and skill with which food is prepared and served and the immediate desires and attitudes of the persons fed. A public institution, by its size and nature, has the limitations of public responsibility, mass production and service of food, and in so far as possible, an equal treatment of everyone, unless an exception is medically justified.

Since it is possible to secure a diet that is nutritionally adequate from a large number of different kinds and combinations of foods, which vary greatly in cost in relation to nutritional value, the State must decide the level of expenditure of public funds at which it will provide meals for its wards and then the food administrators can determine the kinds and quantities of common foods which can be used to prepare satisfactory meals at this level of expenditure. "Reasonable satisfaction" recognizes that the wards differ in their food habits and standards of what is acceptable, as does the ability of the culinary staffs of institutions to prepare and serve food attractively. Whatever dietary and monetary level is set must also have public acceptance and support.

The acceptability of meals is determined by the kinds of food which are available to provide some variety and even more by the methods used in their preparation and service. A poor cook can serve unpalatable meals with an unlimited supply of foods, while a good cook can prepare very satisfactory meals from very simple foods, as everyone knows. The meals should be a demonstration to the wards of what can be accomplished with wholesome food. Generally, they will be planned and cooked to satisfy the tastes of the average of the population with an occasional attention to the food habits of each of the typical ethnic or regional groups present.

Satisfaction of a group is a relative matter. Members of any group adjust to a given set of conditions, even of the best, with a certain amount of complaint. Groups fed at public expense may complain in order to obtain as much as possible or simply to secure attention; they, unlike others, are not self limited in what they eat by their own ability to purchase--a factor which reconciles many of us to what we eat, since it is what we can pay for.

Acceptance of foods by the wards is affected in various ways. It is well known that when large groups are fed they tend to adjust to an adequate, fairly monotonous diet. They readily accept changes in quantity of food or methods of preparation if more attractive meals result, but resist return to the diet they previously considered satisfactory. People are relatively content when each one receives the same quantity of the more attractive foods, such as meats, eggs, fruits, and desserts, even though the quantity is small. Individuals prize the opportunity to receive more or different food from that given the general population. Therefore, it is important to make sure that popular foods are equally distributed and that differences in appetite or food requirements are satisfied by additional quantities of bland vegetables and cereals, such as potatoes and breads with the customary gravies, or spreads. This practice of satisfying the appetite is nutritionally sound because people of the same sex-age group differ little in the nutrients required, except with regard to total calories. The additional calorie requirement is easily provided by the basic bland diet—bread and potatoes. Variety, which is important in successful feeding, can be

obtained by variations in the use of the more attractive foods, through different methods of preparation and particularly as "extenders" when combined with bland foods.

It is undesirable to modify the food pattern of an institution, if it is nutritionally adequate and the population is adjusted to it, unless the changes made can be maintained. However changes, up or down, which result from special ways of preparing commonly available foods, or changes recognized as the work of the patients or inmates, or that are the result of seasonable availability of certain foods are accepted even when they later involve reductions or disappearance of the well liked foods. On the other hand, marked changes made by the apparently impersonal authorities of which the wards have no personal knowledge are subject to suspicion and complaints.

Comment: There is definite evidence that food service in the institutions of the State has improved within the last few years. I believe this is due largely to the policy of the Directors of Finance in supporting the use of food allowances and a system of food control as the basis of feeding operations, with the appointment and use of well qualified food administrators, and maintaining the food allowances in the face of changes in costs of food. The redesign of kitchens and dining rooms and provision of new facilities and equipment for food preparation, transportation and service of food have also contributed to an improvement in the quality of the food served. Provision of some additional trained personnel, particularly at the supervisory level, will make possible better use and distribution of the present ration and better use and care of the buildings and equipment.

The food allowances in the various food controls provide the kinds and quantities of food necessary to assure nutritionally adequate and varied diets that can be prepared within the present institutional facilities and methods of cooking. There is considerable variation, however, in the quality of meals provided from these allowances. The differences lie in the methods of cooking, the quality of products obtained, and the variety of dishes served at one meal.

While obviously the provision of a higher proportion of expensive foods—meats, eggs, fats, fruits, etc., would insure more attractive, acceptable meals from the hands of inexperienced supervisors and cooks, the increase in the cost of food would be far greater than the cost of experienced labor working to make common foods palatable and attractive. Food itself, regardless of cost and palatability, does not insure satisfactory meals. Good standards and techniques of preparation and service are essential at all levels.

The best results were observed at institutions which had a food administrator or manager who had built up wholehearted active support for the food control system both on the part of the administrative staff of the institution and within the culinary staff. It was especially evident where the cooks had become interested and cooperative and were developing better

techniques of food preparation and service. This appeared to be of more importance than the equipment although there was marked progress where the new kitchens and dining rooms and equipment were in operation.

The general attitude with regard to the standard of food preparation and service to be provided has apparently passed from that of simply providing an edible meal to one of a definite effort to provide as good and as attractive a meal as possible. Considerable attention is given to careful practices in the service of food showing that the staff takes pride in its work. Attention is given to variety in methods of preparation as well as in foods used and the addition of an occasional special dish, especially one from the bakery, to keep the meals interesting and acceptable. (Special dishes usually require a considerable amount of hand work as well as organization and planning, and are somewhat easier to accomplish in penal institutions where there are more trained or trainable persons available.)

The provision of bake ovens in the kitchens has made it possible to prepare or finish more food in the oven and to serve it directly from the bake pan. This is an improvement because baked food is more attractive than steamed food or than baked food transferred to the receptacles of the steam table or to pots of food conveyors for transportation and service. Some institutions with cafeteria services garnish the individual serving of food with a sauce, bread crumbs, chopped cheese, etc., others add the sauces to such foods as spaghetti or macaroni at the time of service rather than during the cooking.

There is opportunity for further improvement in the character of the meals within the limits of the food controls. These improvements should result in greater satisfaction and better consumption of the food prepared, a reduction in waste, and ultimately in cost.

Need for Better Distribution and Control of Food. There is evidence that better control is needed over the distribution of the present food allowances within the institutions. This in itself will improve the acceptability of the meals since maldistribution occurs primarily with the more interesting foods—meat, eggs, milk, fruit, and baked products.

Menus are planned by the food administrator or manager on the basis of the ration set up for the different groups in the institution population. The distribution and allocation of particular kinds and amounts of food to one category of diets rather than another, and the preparation of special dishes, is the responsibility of the institution's food administrator or manager and should be done only at his direction. In some cases it is done upon specific orders from the superintendent, the business manager, or a physician, but, if so, these should

be cleared and filed with the food administrator. Actually the allocation and use of food is not always as direct as indicated nor is it always carried out in accordance with the allowances provided in the food control.

There are certain practices, common in institutions, which reduce the amount of food which actually reaches the plates of the wards. There was no obvious evidence nor comment that any group of wards in the institutions visited failed to receive an adequate diet. There was evidence, however, of maldistribution of certain foods which might well lower the acceptability of the diet, and which certainly interfered with the distribution planned in the food control. The fact that the rations as set are nutritionally generous and contain an added allowance to cover losses in cooking, waste and inefficiency, makes the unequal distribution less serious from the standpoint of health. However from the point of good public administration closer control and better accounting is needed.

The maldistribution in point occurs chiefly as the result of theft, both intentional and unthinking; diversion by special favor; and failure to use the food allowances in accordance with the distribution planned.

The first kind of theft is controlled by locking doors and keeping watch over personnel. Its prevention slows down and complicates operations. The other, the unthinking, unauthorized, use of food allocated to the patients or wards by the employed personnel of an institution or hospital requires that more food be sent to the ward or dining room or the size of servings reduced. Both kinds of theft cut into the planned food allowances and result in meals of poorer quality and quantity and undermine the food control system.

Diversion through special favor is the official, unofficial, or even unknown, allocation of more food to a person or group of persons than is contemplated for them in the food allowances. It is used in some institutions as compensation or incentive for work or favors and is accomplished either by allotment to individuals or by assigning a larger number of people to the dining rooms where special rations or special meals are served. This has been a common practice in penal institutions, in general, but is fast disappearing. It was not observed in the California penal institutions visited. It occurs in hospitals when more patients receive special or treatment diets than were planned for, and when larger servings than provided in the food allowances are served some people. It also occurs when abnormally high amounts of certain foods are prescribed in treating patients without obtaining allocations of food for therapeutic use.

Cases were observed of the use of more foods by particular groups than was planned and purchased for them. They include over-usage for employees and residents as the result of the present methods of estimating the purchase of food to meet the allowances established for them as discussed below. The adjustment made to compensate for the failure to obtain sufficient food to meet their "normal" demand made inroads on the total food supply.

OPERATION OF THE FOOD CONTROL SYSTEM

The Food Control System is an operational procedure by which the various institutions, homes, schools, and camps are provided with suitable rations developed to meet the needs of the type of ward served. The rations and the food allowances are planned to meet Recommended Dietary Allowances of the Food and Nutrition Board of the National Research Council for specific food nutrients for sex-age-activity groups. They represent the average needs of a population and also the practical problems of institutional food preparation and service, such as the customary food patterns of the community, kinds of foods commonly available at various seasons, the need for variety and maximum use of locally produced foods, as well as the facilities, equipment and personnel available for preparation and services. The allowances are, therefore, usually an upper limit and not to be used irrespective of need, but a source of food within which to operate. With skill and control some foods should be used in smaller amounts. They should be subject to modification, either decreased or increased as the result of experience or scientific or other evidence.

Ration (Basic Food Allowances). The ration (basic food allowances) is expressed in terms of pounds-per-person-per-day of groups of foods in standard state, as compared to miscellaneous volumes, containers, and conditions in commerce or use. The common foods used in the ration are classified into 15 to 20 groups on the basis of similar nutritive value; because they are used in large quantities in the daily diet; are unique; or have special dietary or culinary use in the diet. The food allowances, as set in the ration for budgetary purpose and operation, are the kinds and amounts of specific foods, within each food group, characteristic of the food pattern and experience of a department or agency. They are related to and provide for an acceptable varied diet over a quarter of a year through the use of basic menu patterns and standard portion sizes of foods. The basic menu pattern distributes the food over a quarter of the year at daily, weekly or monthly intervals, and the standard portion size gives the basis for an equitable distribution of each food. The foods within the food groups are numerous and varied so that adjustments can be made within them to season and availability of food, as well as to the needs of particular groups and institutions, and still assure a nutritionally adequate diet.

The ration, which is set in terms of food groups and nutritional requirements, provides the basis for nutrition accounting and for adjustments. The food allowances provide the basis for budgetary analysis and adjustment, procurement, production, use, and financial accounting. The assignment of the specific weights (in pounds) of food from each of the food groups which are to be used in the ration, insures the weighting between groups necessary for the so-called "balanced" menu as well as adequate diet. It is a practical application of the principles of nutrition.

The Food Control System permits flexibility in the choice of foods within food groups. Established food patterns can be maintained within a framework which safeguards nutritional adequacy. The food allowances (the right amounts of the right groups of foods) are the basis of meal planning which in turn is the application of the food control to the actual meal service. It assumes, correctly, that it is simpler to plan meals in terms of nutritional requirements than to evaluate the dietary from food portions served.

The quantities of foods provided in the total ration of an institution are sufficient to provide the number of standard size portions required for the population and contain an additional quantity which represents the experience of the institution necessary to put the standard size serving on the plate of each of the wards. This additional allowance, approximately 15%, represents the losses due to such factors as poor management, understaffing, inefficiencies and inexperience of cooks and helpers, inadequate equipment, spoilage, plate waste, theft, etc; it is a fairly generous allowance.

Estimates of Food Required. Estimates of the total food required to provide the ration planned are compiled in accordance with the food allowances set in the food controls, based on the anticipated population. Food to be obtained from local production at the institution or from vendors by contract with the Central Purchasing Agency are integrated into these estimates and the estimates for the quarterly purchases are compiled. These are reviewed to determine their propriety and necessity and are checked against the established ration for the particular population, and increases or disallowances made.

Estimates of Cost of Ration. Estimates of the cost of the ration, for budgeting purposes, are based on the lists of foods and quantities of individual foods within the food groups established by the food control, together with their prices at a given base period. These lists are the basis of adjustments due to changes in the cost of living; they also provide control of an institution's financial operations.

The variety of foods listed within each food group are sufficient to reflect, fairly, current prices of that group and to provide a satisfactory basis for the prediction or review of changes in living costs. The quantities of food as set also contain sufficient factors of safety within and among the food groups used to take care of minor fluctuations in food prices, both in general or for particular items and changes in the number of wards, and still assure a satisfactory and nutritionally adequate diet. This is especially true where the skill of the cooks is better than average. These factors of safety also permit well considered and planned variations in the kinds of foods purchased within a food group or in some of the related groups in order to meet the desires of particular institutions.

After approval by the department food administrator and administrative officer the estimates of the food required are sent to the Bureau of Purchases of the Department of Finance which consolidates estimates of purchases of staple commodities and proceeds with procurement. It issues purchase orders for supplies to be obtained, to vendors who deliver directly to the institutions.

The food produced at an institution is delivered, through the store room keeper, to the culinary department. The procedure for inspection of food for quality as well as specifications and grade of meat are reviewed, briefly, under "Purchase, Inspection and Use of Food."

Pricing of Ration. The prescribed ration is priced once a year on the basis of prevailing prices. It is important that the price reflect the cost of delivery of the food at the institution under the conditions under which it must be contracted for. A Quarterly Ration Detail sheet which gives the unit prices, the quantity of the food items and total cost per person per quarter, is used to prepare the budgeting data on the cost of the feeding operation.

The value of the food to be produced by the institution is deducted and estimates of the money required for the operation are prepared as the basis on which to request appropriations. The Ration Detail sheets are filed with the Division of Budgets and Accounts of the Department of Finance. If revisions or adjustment of the basic ration are desired they must be reviewed and approved and if additional costs are involved they must be filed with the Department of Finance before they are put into effect.

Pricing of Fruits and Vegetables. The Department of Finance faces a problem in establishing a fair price for fruits and vegetables, other than potatoes, in relation to the periods when they are in good supply and cheap as against those of short supply and high cost. In general, prices should be based on foods in season. There are periods between seasons when the use of a reasonable quantity of fresh vegetables and fruits as garnishes and to provide texture is justified even though they are fairly expensive.

A study should be made with the help of departmental food administrators of the foods in the fruit and vegetable groups which are abundant in each fiscal quarter and their relative importance, both canned and fresh, for nutritive value and contribution to satisfactory meals. Such a study may indicate the desirability of establishing different lists of food groups, as for citrus fruit and other vegetables and fruits, or a combination of lists of fresh and canned foods in some seasons. The study should establish a basis on which to determine the proper use of fresh and canned fruits and vegetables on the basis of price and number of servings. (See discussion of Relative Costs of Fresh and Canned Fruits and Vegetables.)

Population fed. A daily record is kept of the meals served. Monthly reports of all meals served to wards, employees and guests are sent to the central office of the department or agency. The records of meals served are compared with the quarterly estimates in order to check food usage, supplies still available and current expenditures. This record of food used and meals served is as essential to the operation of the Food Control System as is the basic ration; one is meaningless without the other.

Population Reports of Meal Count in Relation to Quarterly Estimates. The quarterly purchase requests are received and approved on the basis of the number of persons an institution has to feed. In some institutions the population means the number of persons on its rolls, although all of them may not be fed. In others the population figure varies with admissions and separations and hence differs from the budgeted population. In addition the estimates include the number of persons fed in the employees' dining room and the needs of the families of the residential staff.

Comment: The estimates for a coming quarter should be based on the actual attendance at meals in the current quarter and not on the budgeted population nor on the estimates of reimbursements for employee meal ticket sales. The estimates sent to the departments or agencies for review should be accompanied by a certified report stating the number of meals served to employees, as well as to the wards, and the basis of estimating the food required for residents in order to justify the approval for propriety and necessity of the supplies. The method of reporting should be similar for all agencies.

Population reports are required for the preparation of nutrition accounts, since such accounts represent the actual per capita use of food rather than food requirements as projected in the estimates.

Quarterly Estimates. Quarterly estimates of the food required by an institution are usually prepared in the business office of a facility in conference with the business manager, food administrator or manager, and the commissary or store room officer; and a representative of the farm operation where food is produced by the institution. The estimates are based on the food control of the department as applied to the population of the institution, broken down into the various categories, such as various types of wards or patients and the employees and residents.

The quantity of food as estimated for purchase for the quarter is corrected for the quantity of food:

a) on hand as shown by an inventory of the stores;
b) on order for delivery within the remainder of the current quarter;
c) to be produced locally in the current quarter and the coming quarter.

The difference is the amount required for purchase for the quarter.

The method used for preparing estimates insures corrections for under-usages of food. It is an excellent method of planning and ordering.

Comment: The method of estimating the total quantity of food required for a day or a quarter in an institution varies somewhat among the different departments or facilities. The Departments of Corrections, Education, Veterans Affairs, and Youth Authority use a single ration for a particular institution or facility and modify it slightly for the medical hospital in cases where it houses a considerable number of patients. Since the regular diet is nutritionally adequate, the number of special diets are restricted and ambulatory patients fed from the regular food service wherever possible.

The Department of Mental Hygiene cares for a variety of patients, which are classified as general patients, treatment patients, working patients, and nursery patients. Four rations specifying quantities of food in relation to patient classification have been used. The possibility of setting a single ration for all patients is under consideration and has been tentatively proposed. This is a logical step except where specific food is to be drawn and prepared in a separate kitchen for particular classes of patients.

Combined Food Controls for the Department of Mental Hygiene. The use of four food allowances in the Department of Mental Hygiene is to permit adjustments for the variations in classes of patients. It assumes marked differences in the kinds or amounts of food required for different categories of patients, such as additional food for treatment, both nutritional and psychological, and for working patients. Both increases are largely in the more desirable foods (meat, milk, eggs and fruit)

and in energy. The treatment ration is liberal and provides sufficient food to allow the physician to choose additional nutrients for special cases; it contains more food than the average person not actively engaged in work can consume. The workers ration provides additional food for work as well as extra meat as compensation for labor; there is no evidence, however, that additional protein is required for work. The nursery ration contains more milk and less of some other foods to provide a diet suitable in character for this class of patients. There is a sufficient number of nursery patients in some institutions to affect the average food pattern characteristic of such institutions as compared with those without a large number of nursery patients.

Within each institution, and contemplated food allowance, the food is supplied to a variety of persons of different age, sex, degree of activity and mental state. All of these variables are contained in the experience which has led to the development of the rations. The basic nutrient requirements of practically all categories of patients are covered in the present general rations with a 15% allowance for waste, and problems of getting food on the plates of the patients. There is a considerable leeway for adjustment to particular categories of patients within the total quantity of food available for the total population.

The proposal to have a combined ration for institutions of the Department of Mental Hygiene is sound and simplifies administrative action. There are sufficient differences between those institutions with a considerable number of nursery patients and those with only a few to justify two overall combined allowances. These food allowances should be based on the present experience and food allowances for different types of patients weighted according to the percentage use of these allowances in the two types of institutions. This proposal differs from that contemplated by the Department of Mental Hygiene in that the special needs of institutions with a considerable number of nursery patients are covered in the total food allowance for such institutions rather than by a modification of a common ration for all institutions. Furthermore no provision is made for additional food for treatment. The combined ration, or food allowance, for institutions with few nursery patients includes food, as indicated above, which represents the experience for treatment cases as well as the other categories of patients in a hospital.

Additional food for the treatment of patients who require more nutrients than are provided in the combined ration or for psychological therapy is essentially a medical problem and should be treated and handled in relation to particular patients in the same way as drugs and medicines. Thus the need for the additional food would be the result of diagnosis, it would be ordered by the physician on a signed prescription. The food administrator rather than the pharmacist would then provide the foods to supply the nutrients, or the special menu, required.

The physician might well consider the use of individual nutrients or concentrates of nutrients rather than food in reaching his decision on modification of the diet. In this way the prescription would either go to the pharmacist or require the addition of nutrients or concentrates to the food for a particular patient. If special food or quantities of food are desired by the physician beyond those provided in the food allowances, it should be purchased or drawn from the food in stock and replaced through purchase on special order, approved in writing by the physician. Such special orders should be entitled "for therapeutic use" and accounted for and defended, if necessary, for budgetary purposes, under that title, since they are for therapeutic purposes and not the overall feeding of an institution.

Employees and Guests. The kinds and amounts of food to be purchased for employees, guests, and residents are estimated from different sets of food allowances from those for the wards of an institution. The estimates required at present are based on the estimated total number of meals served employees or guests during the quarter. No allowance is made for the small number of breakfasts and the large number of dinners commonly served, which presents problems which are discussed elsewhere. The food estimated for employees and residents is added to that estimated for the wards and food used for them is drawn from the common supply except where special sizes of canned or packaged foods not suitable for general use are purchased.

Food Reserve for Emergencies. The quarterly estimates include a reserve of two weeks supply of staple foods which is necessary in a food control that adjusts its purchases with its inventory of food on hand and required. This reserve assures the presence of sufficient food at an institution to operate as planned in the food control should the vendor fail to begin deliveries promptly. It covers the possibilities of a lag in obtaining bids and placing orders. The use of the reserve must be guarded lest it be used in addition to the food contemplated in the food allowances.

Comment: In times of stress or food shortages in general it would seem justifiable to increase the reserve of pertinent items to as much as a month.

The food control permits flexibility in the purchase of some items in periods of seasonal surplus for use later, since it predicts the total quantity of food required in a year's time for a population that is relatively stable. The determination of such purchases is, however, one of policy in disbursing funds and cost of storage as compared to purchase at quarterly intervals.

Present market conditions have interfered somewhat with the smooth operation of the method of ordering food and have resulted in some delay in the delivery of food to institutions by the beginning of the new quarter. This has resulted in complaints at the institutional level where shortages necessitated revision of the menus planned and more frequent repetition of some foods than is desirable. It has not, however, affected the adequacy of the diets served.

Ordering Food Within an Institution. Food for immediate use is ordered by the institution's food administrator or manager, usually at weekly intervals, from the institution's central store room. The meats and especially the fresh fruits and vegetables which are obtained from vendors are delivered at predetermined intervals or on notification from the institution as to the kind and amount desired. In the latter case, the institution is limited to a definite sum of money based upon the poundage set by the food control and the projected price for this quantity of fruits and vegetables determined by the Department of Finance.

Meats, milk, and fruits and vegetables, fresh or canned, produced by the institution are delivered at pre-arranged periods, or, in the case of fruits and vegetables, upon notification from the vegetable gardener of the kind and amount to be available in the next two or more weeks. Menus are planned at least two weeks in advance to assure a good balance. If some of the food fails to arrive at the desired time menus must be revised; sometimes this is a rather complicated procedure which may result in an unsatisfactory meal. Difficulties occasionally occur when changes in the weather prevent the gardeners from supplying their products, and canned vegetables or fruits have to be substituted or menus otherwise modified.

Orders for food from the storehouse are prepared in triplicate; one copy is held by the storehouse, one goes to the business office and the third to the culinary department. Actual deliveries of food are recorded on the latter copy which then goes to the business office where its records are corrected and any action indicated is taken.

Menus. Menus in most institutions are planned by weeks which run from Wednesday of one week to Tuesday of the next week. This permits perishable food to be delivered and used with a minimum of storage. Where menus run from Monday to Sunday the period of storage from Friday to Tuesday is rather long and ordering and deliveries under the present five-day week present many uncertainties.

Comment: Basic Menu in Relation to the Food Control and its Use. The food control operates under a series of basic menus for each department which provide for portion sizes for the various foods or food groups, at daily, weekly, or monthly periods in a quarter. The basic menu is an assurance that the food is distributed over the quarter and helps the inexperienced cook or employee to use the food wisely, with sufficient variety to assure acceptable meals. The portion size provides the basis for equal distribution among the wards. The combination of the food controls and the basic menus is responsible for much of the success of the Food Control System in California. It is an additional safeguard and bulwark for the culinary personnel with their varied skills and backgrounds since it supplies a workable guide for the use of the food allowances provided in the control.

The use of a basic menu is somewhat restrictive to well trained culinary personnel. They have, however, ample opportunity to demonstrate their ability and to adjust to the food habits of the immediate community since the basic menu seldom says how to use the food. Recipes have been developed in some cases. They are valuable to the new cooks and helpful to the experienced cook in the day to day problem of doing something better.

The basic, or as it is sometimes called, the "unit menu" permits the preparation of menus within the food control at the institution and in relation to its needs and standards of acceptability, the food habits and characteristics of the population, the capabilities of the staff and the local foods, equipment and tableware available. In the long run, it is the most effective method of utilizing food since it places the responsibility of preparing menus acceptable to the population upon the institution staff. In addition it helps the culinary personnel to do the work for which it is employed and for which it should receive the credit and approbation as well as criticism, which is so much more common. The preparation of menus at the institution has the further advantage that the institution learns to take care of itself; it removes the excuse that ineffective operations and unsatisfactory results are due to the lack of sufficient material specified in a prescribed menu.

The unit menu differs from the master menu which is sometimes used. The master menu specifies not only the food but, often, when and how it shall be used, whereas the food control and the unit menu provide the food in sufficient kind and amount for a quarterly period with general instructions as to its use but leaves the decision as to its ultimate use to the institution. The master menu provides variety in relation to season and food available in the markets in general. Its successful operation still remains with the institution in that it is often necessary to adjust the menu to be served to the food actually delivered, rather than that planned, because of failure or change in delivery, as well as to adjust it to the food habits of the population.

Adjustments and Changes in Food Controls. The provision for some flexibility within the food control is the basis of successful operations at the institutional level. It offers the opportunity to initiate improvements and provides a haven of retreat in case they do not succeed. It is obvious that variations in the kinds and amounts of particular foods, within a group or between certain of the groups, are both justified and desirable. However the variations permitted at the institutional level should be limited by two factors, the cost to the State must not be increased and the nutritive value of the total diet must not be lowered below the requirements of the population.

Responsibility for Adjustments. The request of an institutional food administrator or manager for authorization to alter the details of a food control carries with it the implication that the resulting meals will be equally acceptable to the population and that the nutritional adequacy of the diet will be met or improved. Changes should seldom be permitted in the food pattern of institutions that do not have a technically trained supervisor who understands the nutritional effects of the changes and has the experience to assure successful operation under the changed allowances from the point of view of acceptance. Changes in the food pattern of the food control bring problems of administration within the institution such as evaluating the request, accounting for funds and determining the adequacy of the diet supplied. When operating within the established food allowances the administration is limited only by the allowances themselves. It purchases and issues food on that basis.

Its records and reports are judged in relation to the food control.

When changes are made, however, the cost of a particular food group or groups becomes a limiting and accountable item. There is, moreover, the added responsibility to make sure that the total nutritive value of the diet has not been lowered below the nutritional requirements of the average of the population affected by the change.

Comment: An estimate of nutritional adequacy is not difficult nor time consuming provided the records are kept in such a form that the average quantity and cost of a food group can be determined and the number of persons or meals served is available. This means arrangement of the foods in the Stores or Local Production Accounts so that the foods in each food group are kept together, entered by type and size of containers and similar volume or weight of food as outlined under Food Groups. These records and accounts are the responsibility of the institution itself. The nutritional phases of the reports should be reviewed and certified by the institution's food administrator or manager, preferably from the records of the accounting office.

When a change is to be made in a coming quarter there will need to be an alteration in the usual method of assembling the data. The simplest procedure would seem to be to calculate the requirements for the current two months plus two weeks reserve on the basis of the existing population and food allowances, corrected with the inventory, prospective deliveries and farm production. The next quarter would then be calculated separately on the basis of the population and new food allowances, corrected with any surplus food on hand, as the result of the first calculation, and the farm production. In the case of fresh fruits and vegetables on an open order the adjustment might be made at the time of ordering unless the Bureau of Purchases requires previous knowledge.

Basis for Change in Food Controls. Proposals for changes in a particular food control or for a unification of food controls should take into consideration the various factors upon which each control is based and in addition the ability of the institutions to adjust successfully to them. Changes in the food allowances which involved no increase in the cost of food within a food group have been recommended by departmental or agency food administrators or managers, approved by the Department of Finance and adopted. This is logical since the food administrators are familiar with the needs of the institutions and are trained and competent to recommend adjustments. Changes that reduce the cost without affecting the acceptability of the diet are desirable, and should become increasingly possible as the result of better management and methods of operation, more trained and experienced personnel, redesigned kitchens and improved equipment and standardized procedures in food preparation and service.

Permanent changes in a food control may be justified as the result of changes in scientific knowledge or technological advancement. Recommendations for such proposed changes should indicate the value of the particular food or the amount of a food, the difference in cost involved, the method of arriving at the cost, and the effect the change will have on the nutrient content and

acceptability of the diet as a whole, as well as in relation to a particular food group, and to its acceptability. The acceptability of the diet as a whole may be affected by the absence or presence of this food, and changes in preparation and use of the food or the diet as a whole may be involved.

Changes that result in increased costs, which are not related to changes in cost of living, may sometimes be justified, but they require a thorough review of the capabilities and operation of institutional personnel and equipment, the effect upon the over-all nutritive value of the diet, the contribution of the particular foods involved to the acceptability of the diet as a whole and their influence upon the acceptability of other foods. A change in an established food pattern that is confined to the food itself is not as desirable as one that concerns a food that can be utilized to increase the satisfaction and consumption of the cereal grains and vegetables which are the backbone of our dietaries.

Changes in food allowances that cannot be accomplished by adjustments within the food groups at the existing costs should be reviewed by a nutritionist not administratively related to the department or institution concerned. The justification should be a matter of record since it affects future operations and may require legislative approval. Proposed changes which involve increased costs should be considered both as to the money involved and the willingness of the people of the State to continue the support of the higher level proposed; their ability to purchase a similar diet will naturally influence their attitude toward the proposed changes.

An increase in cost may be justified by a reduction in personnel required to prepare or serve the more expensive foods, a reduction in supervisory personnel required to care for the wards because of better morale or by a better rate of recovery or of rehabilitation. In the case of a reduction in the desirable foods in the food control, additional personnel and equipment may be required to prepare acceptable meals or for supervisory or custodial care of the wards.

Adjustments in Food Allowances. Adjustments in the food allowances of the food groups within a food control should be nutritionally sound and based on uniform procedures, as indicated in the following discussion which is related to the groups most likely to be involved.

Meat, Milk and Eggs. The quantities of animal proteins represented by meat, milk and eggs in the food control allowances in the various agencies are sufficient to cover the needs of most populations. Variations and substitutions within these three groups are justifiable within the cost of the present food allowances. (See discussion of Food Groups.) If an institution has produced or wants to buy additional quantities of any of these foods, the change should be accomplished by a reduction in one or the other of the groups (on the basis of cost in relation to the cost of all three groups and when the general cost of food is stable).

Vegetables and Fruits. The vegetables and fruits most important nutritionally are (1) the leafy green vegetables, which are good sources of a number of nutrients and particularly carotene (precursor of Vitamin A), iron, protein, ascorbic acid, and (2) the yellow vegetables which are important for carotene and ascorbic acid. The remaining vegetables and fruits are especially important for ascorbic acid. The fruits are important factors in providing an

acceptable diet. Tomatoes and tomato products also play an important role in most diets because of color and flavor. The interchange of foods in the fruits and vegetable food groups (other than leafy green and yellow vegetables, and tomatoes) within the ration cost for these groups, is permissible, provided, as with all interchanges, it is not made at a time of a marked drop in food costs and the intent of the interchange is to utilize the increased purchasing power of the funds allowed.

The growing use of fruit nuggets, which increase the possibilities for variety in food preparation, suggests that they are likely to be used as substitutions in the present allowance of dried fruits. Such substitutions should be made within the present cost of dried fruits.

The possibilities of interchange of vegetables and fruits are discussed further under "Food Groups."

Fats; Butter and Oleomargarine; Fats, Other; Grain Products; and Sugars. Adjustments between the groups Fats, Butter and Oleomargarine, Fats, Other, Grain Products, and Sugars are related primarily to the acceptability of the diet and calories within the cost of the groups in the food controls provided the nutritive value of the diet is not impaired. The nutritive value of sugars and the "fats-other" are essentially energy. Both the sugars and cooking fats are most useful in improving the attractiveness of the baked products and made dishes of the menu. Sugar is used directly as a sweetening agent. Jams, jellies, honey, and butter and oleomargarine are used as spreads with bread and in baking. Butter and fortified oleomargarine contribute Vitamin A to the nutritive content of the diet. The grain products supply a considerable or large proportion of all nutrients except Vitamin A and ascorbic acid. The vitamins particularly concerned with the use of carbohydrates by the body are contained in whole or slightly milled grain products or are added to enriched flour and bread. Hence, an increase in the use of grains or their products except the highly milled products, such as starches and high extraction flour and unenriched bread, does not require the same review of the adequacy of the diet as it does in the case of an increase in sugars or fats.

No particular comment is necessary with regard to cereals, sugars, and legumes-dried. Adjustments at quarterly intervals should be permitted within these groups under the general principles discussed for the animal foods and fruits and vegetables. The major danger lies in the substitution of so much sugar or fat as to lower seriously the level of the Vitamin B-complex.

There are occasions when it may be desirable to report the use of the pastes, spaghetti, macaroni, and possibly rice as a separate sub-group of the cereal products because of their place in the menu and possibility of too frequent use.

Recommendations with Regard to the Present Food Controls. The present food controls provide nutritionally adequate diets for the populations concerned and if followed as designed are capable of supplying reasonably satisfactory meals. This observation is the result of examination of the food controls as planned; a study of the operation in many of the institutions and subsistence for a period of six days on the food allowance of the general patients, the simplest diet of the Department of Mental Hygiene.

The following findings and recommendations are made with regard to the present food controls:

1) The distribution and quantities of the individual foods in the major food groups are generally similar. Minor variations within a group can be covered within the allowance of a group without seriously affecting the nutritive value of the diet as a whole.

2) The practice of the Department of Finance of calculating the financial needs of each institution is a sound procedure.

3) A uniform method of listing and converting food allowances should be established and followed by each department and agency in preparing and accounting for its food controls to facilitate preparation of nutrition accounts. The practices recommended with regard to food groups are outlined in the section on food groups.

4) Departments, agencies and institutions should be permitted to make adjustments within each group and the money allowed for it, to permit the variety desired, on an agreed upon basis, such as recommended in the earlier discussion.

5) Since adjustments within or between groups may result in changes in overall nutritive value of the diets of the institution or parts of the institution, major changes should be accompanied by a statement that they will not seriously affect the nutritive value or acceptability of the diet as prepared at the institution. Such changes should show that they were reviewed and approved by the department food administrator.

6) The food control for the patients of each institution of the Department of Mental Hygiene should be based on the average of the present quantities of food provided for the different types of patients, weighted according to the average distribution of patients in institutions (a) with, and (b) without, a large proportion of nursery patients. This average should be recalculated at the end of each fiscal year. Additional food for special treatment should be obtained on prescription of the physician in charge and accounted for, financially, as a separate item.

7) Food allowances for employees should be reviewed and a uniform food allowance for all departments and agencies established, approved and implemented. Quarterly food estimates for employees of an institution under the present operation of employees dining rooms should be based upon the average attendance at breakfast, dinner, and supper during the previous quarter. The food used should be issued and accounted for on the basis on which it was provided.

8) Practices with reference to the sale of food, particularly meat and bakery goods to residents should be reviewed. Prices set for cuts of meat prepared for residents from carcass meat delivered to the institution should be based on their proportionate cost of the carcass. Prices for bakery goods should be set by the Department of Finance in approximate relation to commercial practice.

PURCHASE, INSPECTION AND USE OF FOOD

Specifications and Standards: General. The procedure for the preparation of quarterly estimates for the purchase of food is based on the food allowances and constitutes a quarterly correction of supplies on hand, about to be delivered and produce expected from the institution gardens. The Division of Purchases, Department of Finance, purchases the food required through bids on the basis of specifications or designation of accepted standards of quality. In the case of canned foods, samples are sometimes required for determination of quality in acceptance of bids or comparision with the quality of food delivered.

Purchase and Inspection. Purchase and inspection of fresh fruits and vegetables for facilities near central markets are made through representatives of the Division of Purchases for delivery directly to institutions. Inspection for quality and the extent to which foods offered for delivery meet the specifications or standards contemplated in requests of the institutions on bids are made at the point of delivery.

My review of operations was primarily at institutions. Technically the determination of quality and extent to which food meets specifications is made by the officer in charge of the store room or commissary. Practically the culinary department reports defects in food delivered except obvious damage or low quality of food. At the camps of the Youth Authority, and Department of Corrections the determination of quality of food lies with the Commissary Officer but is often made by the cooks at time of delivery. Suspected cases of adulteration or contamination are referred to the nearest laboratory of the State Board of Health. Questions of standards or quality are often referred to the nearest representative of the State Department of Agriculture. Cases of repeated differences of opinion between the culinary department of an institution and the storekeeper were reported -- none were actually observed.

Specifications are available for many foods. Meats are inspected and stamped by the Bureau of Animal Industry, U.S. Department of Agriculture, for wholesomeness and by the U.S. Department of Agriculture for grade. Specifications or description of standards of quality for all foods and especially fruits and vegetables are needed to assist the storekeepers or commissary officer and the culinary departments of institutions to determine that food delivered meets the expected quality or grade of food ordered.

Inspection at Institution. The qualifications for appointment of a storekeeper or commissary clerk or manager, etc., provide for the receipt and inspection of food and determination of the correctness of quantity and quality. The Commissary Manager Grade II and I "determines the quality and kinds of materials to be purchased and prepares specifications." The Institution Food Administrator is required to be able to "check the quality of received food supplies" at least in the store room.

I found that the store room keeper could generally find the specifications but he was not always conversant with them. There was evidence of dependence on past experience and opinion as to quality of food rather than adherence to set standards, especially for fruits and vegetables. It is obvious that there is need for a complete set of food specifications in the hands of both store keepers and the

responsible officer of the culinary staff and for some instruction in their use. Unfortunately, the specifications for fresh fruits and vegetables cannot be expressed as exactly as those for many other foods which can be reviewed in the laboratory.

Inferior quality of food, actual or suspected, is not only a question of whether the State is obtaining full value for the money spent but it concerns the morale and satisfaction of its wards. Knowledge of delivery of inferior quality food, or suspected inferior quality, spreads rapidly over an institution and results in the rejection and waste of food that often is suitable for consumption. Information on quality of food often originates from an unguarded remark of an employee who is not necessarily competent or required to pass upon quality. The use of, and comparison with, specifications is one of the best means of quieting suspicion, for if food meets the specifications the burden of responsibility is removed from the staff of the institution.

Grade of Beef. The quality of meat purchased includes U.S. Choice, Good, Commercial and Utility Grades, formerly designated Good, Commercial and Utility. The Utility Grade is used in greatest quantity. Various opinions were expressed as to the relative value and usefulness, in terms of quantity of meat obtained, of the various grades of beef. Some cutting tests have been conducted. The data available to me are summarized in the accompanying table. They indicate that the usable meat is approximately 74% of the carcass of the Utility Grade.

Results of Meat Cutting Tests of Carcass Beef
in Pounds and Percentages

Institution	Commercial Steer		Utility Cow		Commercial Cow	
	Before Cutting	After Cutting	Before Cutting	After Cutting	Before Cutting	After Cutting
Patton State Hospital						
Weight, pounds	367	284	352	380		
Percent usable meat	77.4		79.6			
Modesto State Hospital						
Weight, pounds			325	231	314	203
Percent usable meat			71.3		64.5	
Agnews State Hospital						
Weight, pounds	356	286	345	241		
Percent usable meat	80.3		73.9			
Folsom						
Weight, pounds	311	258	272	204		
Percent usable meat	83.0		75.0			
San Quentin						
Weight, pounds			342	257		
Percent usable meat			75.1			
Total, Weight	1034	828	1636	1213		
Percent Usable meat	80.1		74.1			

The shrinkage of two pieces of beef when cooked under identical conditions, five hours, with 1500 pounds other meat, was as follows:

Commercial Cow	14.75%
Utility Cow	18.03%

The difference in loss was primarily in stock and grease.

Grade of Meat Used by Institutions. The determination of the grade of meat most useful in institution feeding is related to the way it is to be prepared, the cost of "usable" meat, and the extent to which the additional cost of the higher grades of meat is justified. The muscle protein with its vitamin content is the unique nutritional characteristic of meat. Unless the fat contributes to palatability it can generally be obtained more cheaply elsewhere. The primary interest of the wards in meat is palatability and the added flavor it contributes to bland foods such as potatoes, the pastes and breads, or the meat gravy to add to them. There is little difference in the nutritive value of the various grades of meat except in the calories of the fat. There is a reduction in the quantity of protein and vitamins per pound as the result of the additional fat which is practically free of vitamins and protein; the yellow fats, however, contain carotene and vitamin A. There are differences in the quality of the juice of different grades and often in their tenderness, especially of the cuts used for steaks and roasts. The methods of cooking used in institutions tend to reduce such differences.

In general, the major concern in the use of different grades of meat for food preparation in institutions is the quantity of muscle tissue, or the number of slices or pieces of meat that is obtainable from the various carcasses. Justification for use of the higher grades of carcass meat should rest primarily on the proportion of "usable meat" in the various carcasses in relation to price. "Usable meat" can properly be defined as the separable lean with the quantity of external fat characteristic of commerce and use in the institution.

There may be occasions when a higher grade of meat than Utility Cow or Steer for general use is justified. Purchase under such circumstances is, however, questionable unless the State is prepared to continue to purchase that grade. This statement is the result of my experience that it is much more satisfactory in the end to use the grade of meat which can be provided continuously than to vary from one grade to another. The repercussions of a shift from a high grade of meat to a lower are greater than the satisfaction obtained from the original change.

The determination of the grade of lamb and mutton to be purchased should be based on similar considerations to those for beef. There is definite evidence that the fatter carcasses of lamb and mutton result in more waste than thinner ones because it is more difficult to utilize mutton fat and it is not eaten so well by the wards.

Use of Fresh and Canned Fruits and Vegetables. The food allowances of the Food Controls provide for the use of canned or fresh fruits and vegetables on the basis of relative cost. In general, the business manager and institution food administrator or manager determines whether fresh or canned fruits or vegetables should be used on the basis of the cost of the number of servings that can be obtained from a Number 10 can in relation to the cost of the same number of portions in pounds of the fresh fruits or vegetables; for example, tomatoes canned or fresh

yield approximately the same number of servings per pound; a Number 10 can holds approximately 7 pounds of tomatoes; hence, if fresh tomatoes cost 5 cents per pound, 7 pounds will cost 35 cents. If a Number 10 can of tomatoes costs 30 cents, it would be cheaper to use the canned tomatoes. (There are, of course, occasions when it would be justifiable to use the fresh tomatoes, as for garnishes and variety, in relatively small quantities, even if a little more expensive.)

In general, the cost of canned fruits and vegetables and the number of servings that will be obtained is well established, as is the conversion factor by which to relate it to the number of servings to be obtained from a pound of fresh fruits or vegetables. It is thus simple to determine the cost of the number of pounds of fresh food necessary to supply the same number of portions as a Number 10 can. A uniform set of conversion factors for use in determining the relative cost of fresh and canned food should be established by the department food administrators and published in the Inter-Agency Manual.

There are occasions, such as when a plentiful supply of fresh foods from an institution is available, when the use of canned foods is not justified on the basis of price alone. Under such circumstances if the market price of the fresh food is higher than that of its equivalent in canned food, the farm operation should be credited only with the value of the canned equivalent of the fresh food unless it can sell its produce elsewhere at the higher price.

Suggestions for Improved Procedures for Inspection and Use of Food. Further use of specifications in the purchase of foods and improvement in the ordering and checking of foods, particularly the perishable supplies, would be made possible through provision for:

a) A field representative of the Bureau of Purchases, who would constantly check supplies at the facilities of all agencies against the purchase order specifications; he would also instruct storekeepers and other personnel concerned in the use of specifications.

b) A regular market information service for institution food administrators and managers, on fresh fruits and vegetables in season at minimum prices.

c) An inter-agency agreement on factors for use in determining the use of fresh versus canned food.

d) A permanent inter-agency committee composed of representatives of the Bureau of Purchases and each agency of the State using food to review and revise, when necessary, specifications for the purchase of food and methods for control of the delivery of food. There is at present a subcommittee on standards in Inter-Agency Committee on Food and Nutrition which is concerned with such problem. The proposed committee should replace the subcommittee but it should consult with the Inter-Agency Committee on Food and Nutrition.

Production, General Use and Delivery of Locally Produced Food by Institutions.

There is a close relationship between the nature and kind of food produced by an institution, and the way in which it is used and accounted for, which influences both food production and culinary operations. The food is produced to feed the wards of the State; in most cases some of them help to produce it and others help to prepare and serve it. Administratively the business manager is responsible for the operations of agricultural production; for those of the store room keeper, who passes on the quality and weight of the food produced; and the culinary department which uses it. In some institutions the business manager is in direct charge of the various agricultural operations and the persons responsible for the garden, dairy, fruit, poultry and swine report directly to him; they deal individually with the store room keeper. In other institutions an officer is in charge of all agricultural operations; this is the procedure in the Department of Corrections. In this department, after January 1, 1952, food will be produced and purchased from the California Correctional Industries in the same manner as in commerce, although the business manager may still have a direct interest in both the industry and the institution.

Inspection and Payment: In the course of delivery of locally produced food, the store room keeper inspects the products for quality, determines the quantity, and certifies receipt. The person in charge of the culinary department checks and acknowledges receipt. Payment and accounting for institution produced agricultural products used in the culinary department are at the prevailing price paid for the quality of the same food purchased in open market. The price is set quarterly by the Bureau of Purchases, Department of Finance. The policy has been established that deliveries from the farm shall be in the condition and quality required of food when it is purchased on the open market. Facilities have been provided, in many cases, for the proper cleaning, trimming and grading of produce.

Present Practices are Not Satisfactory. In spite of all of these precautions and requirements the quantity and quality of vegetables delivered for use in the kitchen is often not that required or expected. I made this personal observation in a number of cases in the course of my visits to institutions. It was reflected in statements or by inference in most other institutions as well. The problem is recognized at all levels of responsibility and, as indicated above, the administrative checks are satisfactory. The difficulties lie in the natural desire for proper financial recognition of agricultural operations and the maximum use of the products. It is often difficult to carry out the official procedures because of the poor quality and ineffectiveness of some of the work performed by the wards as well as the institution's desire and, at times, the need to make use of products that are over-age or not in a condition acceptable in commerce.

Proposed Solution. From the point of view of food control, nutrition, and nutrition accounting, it is necessary to know how much "standard" product is provided, used and accounted for. What is needed is evidence as to whether the food produced is used for pigs or for people. Some means of control should be developed to provide this information with respect to vegetables and fruits. This could be attained by requiring the culinary department to certify the quantity of food obtained from a delivery of food from the gardens or orchards after it has been cleaned, trimmed and peeled and is ready to go to the kitchen for cooking. The business manager would then add an arbitrary percentage of

weight, agreed upon by the agency heads and the Agricultural Adviser of the Department of Finance, which would represent the average losses expected from a particular food of the grade and quality contemplated when purchasing it.

This procedure would give assurance of the quantity of food prepared in the kitchen. It would permit the handling of foods that were not up to specifications with the least complication in accounting. There are two objections,

a) such a procedure would appear to transfer the responsibility for the certification of the quality and quantities of food from the store room keeper to the culinary department and, in effect, the vegetable preparation room;

b) inefficient work in the preparation room might result in injustice to activities of the agricultural operations because of excessive waste beyond the agreed losses.

Such possibilities are, however, no greater than those resulting from present occasional delivery of inferior products and sometimes excessive amounts of food which the culinary department must work over and for which adjustment is difficult.

Determination of Kinds and Quantities of Food to be Produced. Closely related to the problem of usable farm produce are two others (1) the kinds of vegetables and fruits to be produced, and (2) the quantities to be used in feeding at the height of the season.

(1) The kinds of vegetables and fruit to be produced are limited to what can be grown in a particular area. The kinds of produce, within this limitation, should be determined by what is needed for the Food Control to meet the nutritional needs of the wards and to provide satisfactory meals. This will require coordination between the farm and the culinary department and periodical review in relation to improved feeding within the food controls. The Institution Food Administrator or his equivalent should serve as the source of information as to what is needed and acceptable.

(2) The quantities of vegetables that can be successfully used is in part tied up with the delivery and accounting for fruits and vegetables discussed above, for the question of graded products is sometimes involved. An institution should use the maximum quantities of seasonable fruits and vegetables. There is a limit to the frequency with which some foods can be served without a general refusal to eat them or an excessive waste of food that has been prepared, transported and served. The Institution Food Administrator is responsible for seeing that the food is prepared in forms that are acceptable to the majority of the population. When the time comes that even to these it is not acceptable he should have the privilege of rejecting further deliveries or to reduce deliveries of a food, until he feels that it will again be acceptable.

These problems require joint study, discussion and agreement. This is best accomplished through conferences at least once a year between the Agricultural Adviser, the business manager, and food administrator or manager of the institution. Monthly conferences at the institution between the business manager, the gardeners, dairy operators and other food producers and the food administrators would serve to integrate the food production and consumption operations.

Local Production of Milk, Eggs and Pork and Adjustment for Overproduction. The production of milk, eggs and pork at an institution presents a special problem in relation to the use and adjustment of over or under production and the food control operation. Milk and eggs are perishable items subject to periods of high and low production. These fluctuations can be partially neutralized by attention to the time of breeding the cows and sows and the feeding of both cows and pigs and hens. It is necessary to have a slight surplus at the periods of high production to tide over those of short production. The food controls provide ample quantities of milk and sufficient eggs to prepare acceptable meals. The use of additional eggs and milk to improve the nutritional adequacy of the diets is not justified although additional quantities would often be appreciated. The production of pork in excess of what can be grown largely on garbage is a question of economies and cost of feed, degree of finish and cost of pork in the market.

The Agricultural Advisor to the Department of Finance continuously reviews the herds and flocks and recommends changes in the breeding, feeding and number of animals required to maintain production at the level which will meet the requirements of the food control, with a minimum of overproduction at the flush seasons. This is a proper procedure, but not all herds and flocks have been adjusted to an institution's needs. The pertinent question, in light of the possibilities of interchange of animal foods in the food allowances is, what adjustments should be made in the use of meat, milk and eggs at an institution when there is a surplus of one or another and it cannot readily be transferred to another institution or be processed for future use? The logical adjustment is between meat and excess milk or eggs since the quantity of eggs in the food control is not as liberal as that for milk. With a surplus of milk, the quantity of meats and eggs should be reduced to 0.30 pound of carcass meat and 0.06 pound of eggs per person per day. This figure for meat is an arbitrary one based on the quantity used to illustrate a diet which meets the nutritional allowances of the National Research Council. Its use, as with that of eggs, will permit the preparation of adequate and fairly acceptable meals in the hands of good cooks but it will present difficulties to less competent cooks.

The policy should be established that an institution which has a record of long continued over-production of meats, milk, or eggs is required to adjust its production. In the meantime it must reduce its consumption and, if the cost is lower, to reduce its allotment of funds for the food, during the period of continued over-production. The change should be made automatically at the institution or facility and reviewed by the Department Food Administrator. Such automatic adjustment is required in the Department of Corrections. The Department's communication to California Institution for Men, California State Prison at Folsom, California State Prison at San Quentin, from Jane Sedgwick, Food Administrator, approved R.A. McGee, 2/27/45, Subject: "Milk Ration and Surplus Meat Ration," directs that if there is a surplus of milk above the ration, the meat ration should be reduced on the basis of two pounds of carcass meat for each one gallon of milk surplus, or the surplus milk sold, or the herd reduced.

Use of Ready-to-Serve versus Kitchen-prepared Foods. Most of the culinary departments of institutions have equipment of variety and kind to convert all types of raw food into palatable products; they are in effect food factories. For this reason there is definite question as to the extent to which institutions, especially large ones, should use ready mixed and commercially prepared food products such as are used by large commercial restaurants to cut costs of operation or by the modern servantless family.

The State supplies raw materials and equipment, as well as trained experienced personnel to prepare and serve good meals. In general, the use of prepared and ready-to-eat foods is justifiable only where it is impossible or impracticable to provide equipment and personnel for the preparation of the equivalent of such foods in the institution. The use of prepared mixes for such products as ice cream, frozen desserts, biscuits, rolls, pie crusts, salad dressings, soups, meat extender dishes, gravies and sauces, is questionable. The occasional use of crackers, dry cereals and mustard may be justifiable, even though more expensive, in small institutions with limited equipment.

The use of ready prepared foods should be carefully compared on a basis of cost and nutritive content with the items available in the same food group before a decision is made to use or increase their usage. There are occasions, such as when experienced persons are not available to prepare food, when prepared foods may properly be used. The use of prepared foods for variety may occasionally be justifiable but careful attention to the use and preparation of the basic raw foods is satisfactory to the average population, assures good nutrition, and is usually less expensive.

The use of condiments requires special attention. They are important for variety and flavor but they are often overused. Natural food flavors developed through good food preparation and proper seasoning do not require the addition of assorted condiments. Where condiments are considered, through food habit, the normal accompaniment of a food, such as mint with lamb or raisins with ham, the condiment should be related to the food it accompanies and not simply placed on the table, as is sometimes done. Sauces and gravies prepared at the institution to accompany a dish on the menu are more satisfactory when made from raw supplies to the degree of flavor required than is the use of a prepared condiment such as mustard, in which the concentration of the condiment may not be adapted to the particular dish with which it is served.

Waste and Garbage. The waste or loss of food common to culinary operations consists of

a) The portions of the natural foods which are not customarily eaten or are inedible, such as skins of fruits and vegetables, outer leaves or root tops, trimmings, bones, fruit stones, etc.

Comment: In evaluating diets, the tables of food composition automatically correct for this type of waste. The data on composition are in most cases based on the customary edible portion and these results modified through use of the term "inedible portion" to obtain the data for food when listed "as purchased".

b) Spoiled food: in storage, through failure to use promptly, or in the course of delivery. The latter group includes the food that is not usable in food preparation represented by the tolerance permitted in the handling of perishable food.

c) Normal shrinkage and loss of food in food preparation and service as distinguished from theft or personal appropriation. This includes losses of nutrients in cooking as well as the food that sticks to pots and pans or is left in the stock pots and serving dishes and utensils.

d) Plate waste - food served but not eaten. This group includes both inedible portions such as bones, skin, rinds, etc., and uneaten edible food.

Garbage consists of all these forms of waste as well as added liquids, coffee grounds, tea leaves, etc. In institutional operations it is desirable to make at least a rough separation of these classes into three parts—preparation waste, kitchen waste and plate waste; in large operations where at least a rough measure of waste is desirable, this is in effect the waste of the food preparation room, that of the kitchen and that of the dining room. There is always a question with regard to the separation of kitchen refuse that is inedible for swine, such as coffee grounds, paper and glass from that which is edible. The usual operations make this division.

In good operations a record of the "edible" garbage, divided into kitchen and dining room waste, is desirable because it is a measure of the acceptability of the cooking. The quantity of garbage can usually be related to an increased use of bread in an institution; an increase in the consumption of bread accompanies an increase in garbage because of the unacceptability of the prepared food. Where the garbage is moved in cans a record of the number of cans with a notation of the predominate waste is the first step, provided a further study is made in exceptional cases.

Where garbage is used in feeding swine and the management is good the extent to which grain is required to grow or finish them is a rough but useful measure of the waste of edible food in the institution.

Institution Swine Production. Swine in the United States have been developed to gain weight rapidly. A considerable proportion of the gain is fat. The measure of efficiency of feed utilization is "pounds of gain per 100 pounds of feed consumed" to attain a standard weight of 185-200 or 200-250 pounds. In preparing the carcass for use the excess fat plus trimmings is made into lard and the sides into bacon. Previous to the introduction of vegetable shortenings from cottonseed and soy bean, etc., lard was the primary source of fat for shortening in cooking.

In institutions the primary interest of the State ward is in the "meat" and bacon and the best use of garbage. Meat is primarily muscle plus a small amount of fat in the ham to give it quality. A considerable proportion of lean in bacon is desired except, perhaps, by individuals reared on "white meat" of the South.

Swine production tends to be tied to the 200-250 pound finished live animal. This practice is related to a variety of factors including time of farrowing, gestation period, feed supplies, rate of turnover of both animals and feed, convenience in handling at slaughter, etc.

Acknowledging that the conversion of cereals to fat is an expensive use of feed and assuming that the vegetable shortening to be used to a large extent in cooking is cheaper than buying it as meat, the type of swine and degree of fattening of swine best suited to the needs of institutions would be animals with the maximum of lean; i.e., that do not possess a large proportion of excess fat. This objective could be approached in two ways (a) a rate of feeding that permits development of the bone and muscle with a small but sufficient proportion of fat in the lean, (b) use of a strain or cross of swine that grows rapidly without a tendency to fatten excessively, and yields a large proportion of desirable cuts when finished. (The present trend toward long bodied animals is in this direction.) The most desirable procedure is a combination of the rate of feeding and an animal that grows and develops rapidly without too much fat.

In practice institutional swine should be fed rations adequate for continuous growth without fattening. Where they are fed garbage, the supplements purchased or produced should be determined by the nature of the garbage and the pasture available.

Such a practice of feeding is sufficiently different from the usual farm practices to produce fat swine as to require special consideration. It may be desirable to determine the desired rate of growth as well as the desirable final body characteristics and weight for the particular strains of swine at the various institutions.

Some information is available on the development of gilts for breeding and on Canadian and Danish practices in production of Wiltshire sides, as a first approximation in planning feeding. Another problem which may or should receive attention is the method of cutting the carcass of various types of pork to obtain the maximum number of servings for group feeding.

THE FOOD SERVICE PERSONNEL

The State of California has developed a food service organization which is commendable. It is based upon the provision of sufficient personnel at the institutional level to assure the planning, preparation and service of reasonably acceptable meals, promptly and at regular hours, as is required for the health and well being of its wards. Adequate meals and regular service are important to the morale of most people, but they assume added importance in the lives of persons cared for by a public agency. The planning, supervision and work required to provide them is complex and difficult. It was being accomplished with regularity and a fair degree of success at all the institutions visited. There could well be more recognition of the contribution such work makes to the success of institutional operations.

The desire to improve the character of food service was also evidenced by the personnel responsible for it. Much has been accomplished in the last few years as the result of the development of the Food Control System, the improvement of the food service organization and the provision made for additional facilities, both new and remodeled kitchens and modern equipment.

Comment: Evidence of improved operations was seen in all the institutions visited. Change, however, is both difficult and slow because it must usually be accomplished within the limitations of production of meals, crowded buildings, confusion of new construction, and the handicap of too few or apathetic personnel. The introduction of the eight-hour day and the five-day week has created special problems in the operation of culinary departments which must satisfy appetites three times a day, seven days a week. The number of individuals required to man the eight hour shifts necessary to cover the 84-hour week means an overlapping of shifts, detailed definition of duties for each post and continuous supervision to assure an uninterrupted flow of good products at the appointed times.

Posting of the Duties of Posts in the Culinary Department. The problems of organization of culinary personnel and instruction in their duties and responsibilities is complicated by the 8-hour day and 5-day week with the need for reliefs and overlapping shifts. It is good practice to outline and post the general and, when possible, specific duties of each post in the culinary department. Such notices should be reviewed and modified regularly.

With such a practice a person assigned to a particular post, or part time on one or more posts when there is a shortage of help, is able to check his duties and assure himself that he is taking care of them. A new person, or one temporarily assigned to a post is likewise helped in the performance of his duties. The list of duties also aids checking the completion of duty at the end of a day. They help to fix responsibility in the case of a failure of accomplishment in a post.

The value of preparation and use of post assignments was seen at the Veterans Home of the Department of Veterans Affairs. At San Quentin lists of food to be served and the quantities, which were in effect

a detail of post duties, were supplied each custodial officer who supervised the service of food. Such a practice is important in such situations and would be equally useful in the Department of Mental Hygiene where the persons in charge change from time to time, if only for relief in relation to the 8-hour day.

It is my considered opinion that future improvements will rest more upon the completion of the projected physical buildings and equipment; the appointment of the necessary supervisory personnel, (administrators, secretarial assistance for administrators, supervising cooks and dining room supervisors); and the appointment of competent cooks and/or the development of many of the present cooks and waiters), than on increases in the food allowances in the food controls themselves.

The present food service organization provides the following personnel:

a) Departmental or agency food administrator. Final technical responsibility for the food services of the various institutions or facilities within the departments or agencies.

b) Institution food administrator or manager, Grade II or I, according to the size of the institution. Responsibility for the food services of the institution.

A food administrator Grade I assists food administrators in some institutions in the Department of Mental Hygiene.

Comment: Institution food managers are appointed in the Department of Corrections and Veterans Affairs. They differ from institution food administrators in that they are not required to possess the same formal education in foods and nutrition required of institutional food administrators. They are, however, supported by a departmental food administrator with formal training in food and nutrition.

c) Supervising Cook Grade II. Responsibility for the preparation and service of the food in the larger institutions having a food administrator, and for the activities of Supervising Cooks Grade I where present. He assumes the duties of a food administrator in some of the larger institutions where food administrators or managers have not been appointed.

d) Supervising Cook Grade I or Assistant Supervising Cook Grade I. Immediate responsibility for the activities of cooks; generally responsible for the planning, preparation and service of food in the smaller institutions and facilities. In some correctional institutions, and in Youth Authority and Department of Education facilities, he is primarily a supervisor of inmate cooks or of the boy or girl wards, although he prepares food when necessary. In institutions of the Department of Mental Hygiene he directs the activities of patients as well as of employed cooks.

e) Cook. Direct responsibility for the suitable preparation and service of food. In some facilities of the Youth Authority and prison camps of the Department of Corrections the cook is responsible, as well, for planning of the menus,

initiating the orders for food, preparing of the food, instructing the wards and supervising the service of food. He carries the responsibilities and performs some of the functions of a supervisor.

Comment: The Youth Authority camps offer an unusual opportunity for cooks of exceptional ability who have served in the larger institutions to gain experience in the complete operation of an institutional kitchen. This assumes that if they succeed in the camp operation they will be eligible for promotion to Supervising Cook Grade I in a large institution, because of their experience.

f) Kitchen Helpers and Dining Room Helpers. Perform tasks, as assigned, in the kitchen and dining room.

Comment: Kitchen helpers of ability have developed into cooks where they have worked under exceptional cooks and have been rotated in the duties of helper in the various parts of the kitchen. This practice should be encouraged.

g) Wards of the State. The wards of the State are utilized to various degrees in the preparation and service of food according to their availability, competence, and training. The minimum value obtained from the wards is their use as "hands" to perform simple tasks, such as cleaning floors, washing utensils, and carrying material from one place to another under immediate direction of the culinary staff. Their maximum value is possible when they are already trained, or are trainable, and can assist in the preparation or service of food under the general direction of the employed staff. Their average value may be considered as about half that of an employed person.

The use of the wards by the different departments or agencies varies somewhat as follows:

(1) Department of Corrections: The work of the culinary departments of Correctional institutions is performed by the inmates. Many of them are well trained in the techniques of the preparation of food or are capable of being trained. Often a sufficient number of inmates are available to carry out the detailed work of the more intricate and prolonged operations of food preparation, without special equipment or extra employed personnel such as would be otherwise necessary. The use of inmates in food preparation restricts the need for employed personnel to that of supervising cooks, bakers and butchers. In many cases some of these employees are also used in the rehabilitation program as instructors in baking, meat cutting and cooking. In any case the bakers, meat cutters and supervising cooks are encouraged to instruct the inmates, as well as to improve their work in the culinary department.

The use of inmates for the preparation of food presents problems because of their uncertain dependability in part due to pressure from other inmates, and because of the limited time they may be available for service. On the other hand, in exceptional cases the occasional presence of well trained

workers combined with the hand labor available is responsible for exceptional results with the food available.

(2) Youth Authority: The Youth Authority utilizes both boys and girls in the preparation and service of food. The wards are not as generally dependable nor as well trained as the adult inmates of the Department of Corrections. They are, however, often alert and trainable and perform well under fairly close supervision. In addition there is a considerable opportunity for vocational training which contributes to successful rehabilitation. These reasons justify the employment and use of experienced cooks or supervising cooks who can also teach others, even for the smaller facilities and camps.

Institutions in the Youth Authority which care for the younger boys have an entirely different problem in the use of wards for food services. The boys are relatively irresponsible, easily diverted and require constant supervision. Many of them, however, learn kitchen tasks readily and perform these effectively within the limits of their age and experience.

(3) Department of Education: The pupils in the institutions under the Department of Education contribute little toward the preparation of food except in the School for the Deaf where boys are taught the bakery trade and the class production is used in the menu.

(4) Department of Veterans Affairs: A few members of the Veterans Home are paid to assist in the preparation and service of food. The number of members available who desire to work and are capable of the continued effort necessary is diminishing because of the increasing average age. They cannot be depended upon for continued correctable service.

(5) Department of Mental Hygiene: There is a very considerable variation in the competence and availability of patients for work in the culinary department. In the past it has been customary to utilize some patients practically continuously in the performance of specific tasks. Some of them become very efficient and can generally be depended upon to complete the task on time; others require more supervision or are less dependable. Occasionally patients well trained in cooking, baking, or meat cutting are available, capable and willing to take their place in the performance of their specialty. However the period of time such people are available is relatively short. There are a considerable number of patients who perform tasks, such as vegetable preparation, cleaning and carrying food, under direct supervision.

The program of rehabilitation that is developing in the Department of Mental Hygiene is reducing the number of patients who work effectively in food preparation. This is because they are encouraged to take part in other activities planned for their rehabilitation. The period assigned for these activities is determined by the program of the therapist who is in charge of his rehabilitation. The change from work, the recreation and association with others which is part of this program, is of benefit to the patient. His absence from the culinary department, however, means that another patient of equal ability, or an employee, must be available if the food is to be properly

prepared and served on time. His removal without previous notice sufficient for reorganization of work or replacement may be a catastrophe to the supervising cook; it creates an unstable working situation.

There is need for review of the part the culinary department might play in the rehabilitation of patients. The fact that the regular performance of a task is part of a person's normal living and that food preparation provides useful work experience might justify its integration into his regular program rather than to take the patient away from his work in the kitchen at irregular times and with very short notice to the kitchen as now frequently happens.

Use of Supervisory Personnel. The successful operation of the Food Control System, as previously indicated, is immediately determined by the administrative and supervisory personnel. Of first importance are the food administrators who function both at the departmental or agency level where they have administrative responsibility for the food control operations, and the institutional food administrators or managers who administer the food control at the institutions, schools, homes and camps. Next in importance are the Supervising Cooks, Grades I and II, who have supervision and immediate responsibility for the actual preparation and service of food. These people are directly responsible for the successful operation of a large investment in buildings, equipment and food. Their operations determine to a considerable degree the success of an institution's program and the cost of its operations.

It is the size of the feeding operation in the larger institutions, the number and variety of persons served, the extent of the space required for receiving, storing, preparing, transporting and serving food; the variety and complexity of the large and small equipment in use, as well as the numbers and the varying degrees of ability of the personnel employed that makes constant supervision necessary. The institutional food administrator, or in some agencies the food manager, supplies general supervision. In addition he has administrative duties in cooperation with other administrative personnel concerned with the estimating, accounting, issue, use and storage of food, including farm production, and with projected development.

The institution food administrator or manager is immediately responsible for the food service, buildings and equipment, and food supplies. He determines the proper distribution and use of the food allowances and the operation of the food control.

The supervising cook has immediate responsibility for the organization of the kitchen operations, and the successful use of the food provided. He determines the "reasonable satisfaction" of the ward in his food. Few people realize the planning, organization and supervision necessary to have the complete meal ready, on time, for a large number of persons--with the variations in flavor and texture and the unexpected tidbit, which is the mark of good food.

In the larger institutions, and particularly in those with a number of dining rooms or large cafeterias, an additional type of supervision is needed. This would be supplied by a trained General Dining Room Supervisor, who would supervise the entire service of food, directing and instructing the employed personnel

and the large number of wards used, in the sanitary handling and efficient and equitable service of food. Experienced dining room supervisors would be responsible for the immediate service of food in the particular dining rooms.

Supervisory responsibilities of the importance of those of food administrators and supervisory cooks and General Dining Room Supervisors require well trained persons who are alert and imaginative. Their success depends as much on knowing what is going on, detecting impending difficulties in the operation and making constructive suggestions to correct them, as it does upon the details of planning or organization. They must not, therefore, be confined to particular operations or to their desks. They must be free enough to review the operations of the culinary department or dining rooms without becoming involved in immediate details. It is the ability to size up situations, understand the consequences of deviations from routine, supply ideas for improvements or changes, maintain ideals of performance and develop the ability of the people with whom they work, which characterizes the successful supervisor.

A supervisor conducts a day-to-day in-service training program on an individual personalized basis. Unfortunately some supervisors become affected with the importance of their position and tend to direct rather than to develop the skills, initiative and imagination of the persons they supervise and who actually do the work. The strength of a civil service organization depends upon the growth of the individual employee. This is especially important in the improvement of the culinary services in institutions which are charged with the cure and rehabilitation of their wards rather than with custodial care alone.

In-Service Training. Provision should be made for the development of employees through a planned in-service training. It should be available to a considerable number of the culinary personnel. Many of these people have faithfully and successfully performed routine tasks in the past, and have progressed by seniority, but they lack the training and initiative to adapt to new standards of food preparation and service and to new equipment and new methods. Some of them are so fixed in their ways that they resist change.

Department Food Administrator. The department food administrator occupies a unique position in the Food Control System. He, or more often she, is concerned with the successful use of food in institutions. The cost of the food involved, according to the 1951-1952 estimates, is as follows:

Department of Corrections	$3,644,542
Department of Mental Hygiene	11,963,147
Youth Authority	680,234
Department of Education	322,723
Veterans Affairs	650,756
Total	$17,261,402

The Departments of Corrections and Mental Hygiene each have a department food administrator. The department food administrator for the Youth Authority gives part time service to the Department of Education and to Veterans Affairs by arrangement with the Youth Authority.

These food administrators in the course of their duties at the departmental level, represent the institution and particularly the culinary departments in their requests for food, personnel and equipment necessary to provide nutritious, wholesome and acceptable meals that will further the rehabilitation of the wards, within the policies adopted. They must be able to formulate and interpret these requests and assist in their justification where they involve additional funds. They are interested in the proper and effective use of food at the institutions and assist in assembling and reviewing their quarterly estimates for food in accordance with established policy.

In accordance with the policy adopted by the Director of Finance for determination of modifications in the ration the department food administrator determines appropriate changes and prepares recommendations. This includes an analysis of the current ration and justification of the proposed change on the basis of nutritional need, satisfaction and cost.

Comment: In this work the department food administrator faces a number of complex and interrelated problems. He must be, in effect, an impartial judge of culinary operations, the desires of people, the problems of food management, the nutritional needs of the various wards and the interests of the taxpayer. Solution of the problem requires skill, knowledge and judgment as well as singleness of purpose and intellectual and scientific honesty, tempered with human understanding. In the discharge of his duties the department food administrator must be thoroughly acquainted with the complexities of institution operations and the interests of its personnel.

He has special responsibility in working out plans with the agricultural advisor for local production of food at the institutions which meets the needs of the population within the food allowances of the food controls. He works with the architectural and engineering departments on specifications and plans for suitable buildings, work areas and equipment for culinary departments.

The activities of the department food administrator contain a large element of the application of professional knowledge and skills and understanding to the solution of the problems of culinary departments. Through his efforts, knowledge and experience and his support of the institution food administrators and supervising cooks who actually produce the meals he contributes to the health and well being of the wards and this helps to reduce the problems of custody and simplify the work of custodial officers. Likewise in mental hospitals satisfactory culinary operations increase the possibilities of rehabilitation and help to simplify the care of patients. Failure on his part, may, however, result in unrest, even deficiency diseases or general malnutrition, with need for stricter custody, more attendants, less progress in rehabilitation, even progressive degeneration.

Work with institutions requires visits of sufficient length and "leisure" to learn the needs of an institution and to impart information. Institutions become lost in their own problems and tend to dissociate and magnify them as unique.

For the benefit of the taxpayer, the work of the department food administrator, as representative of all culinary departments (as expressed in good planning, sound decisions, assistance in developing the operative personnel to produce better food preparation, distribution and service) offers possibilities of reducing the spread between the amount of food required at present, and what can be obtained with better operations. These changes may be small in themselves but the total is significant because of the size of the operation.

The importance and significance of the work of department food administrators can hardly be exaggerated.

Recruitment of suitably trained and experienced personnel for appointment as food administrators is one of the most difficult present problems in the successful operation of the food control system. The possibilities for solving it should be further explored, perhaps in cooperation with university and institution administrators, and the committee on in-service training, as suggested elsewhere.

Institution Food Administrator or Food Manager and his Operations. The food administrator of an institution is the central figure in the food service operation. He (who is more often she) carries out the policies of the department or agency to which he belongs. In this he has the advice and counsel of the Business Manager under whom he operates, and the technical advice and encouragement of the department or agency food administrator. He is the institution's technical expert on food and nutrition, and reviews and presents the needs of the food service department, both physical and personnel. Within the culinary department the institution food administrator is responsible for the use of food and equipment; he plans and organizes its activities; maintains and improves the standards of food preparation and service; is responsible for the proper and effective use of food and equipment; and for the procurement, preparation and distribution of food. This latter, in some institutions, involves apportionment of the food and directing its preparation and distribution to meet the needs of the different categories of patients on the basis of age, sex, activity, ability to eat and precedence. He also directs the personnel responsible for the immediate performance of the operations of the culinary department and its facilities.

The institutional food administrator is continuously in touch with the staff of his institution, particularly the commissary or store house, the dairy and garden, and the maintenance, accounting and transportation departments. He deals with agencies outside the institution, such as vendors. Within the culinary department he has the assistance of a supervising cook, head baker, and meat cutter. In the larger institutions he should have a General Dining Room Supervisor. These assistants are, or should be, immediately responsible and accountable for the effective and successful details of operation.

a) Assistant Institution Food Administrators. The duties of the Institution Food Administrator in the larger institutions of the Department of Mental Hygiene require and justify an Assistant Institution Food Administrator Grade I or a dietitian. Such a position is necessary where a considerable number of

special diets are required either in the institution as a whole or in a unit hospital.

b) Clerk-Stenographer for Food Administrators. The number of records, menus, reports and other directives necessary to conduct a large culinary department successfully, either central or divided, justifies provision for a clerk-stenographer. Assistant food supervisors and clerk-stenographers have been provided in some institutions; they should be made available to the others.

c) General Dining Room Supervisor. The position of General Dining Room Supervisor has not been established. It is especially needed and should be provided in the Department of Mental Hygiene facilities wherever there are a sufficient number of dining rooms separated from the main kitchen.

The Food Administrator in a public agency has somewhat different problems and conditions to work under than one in charge of a private or commercial culinary department although the basic ones are very similar. The differences are due primarily to the fact that food preparation is based on one menu for a large population, and that the kitchen and dining room force to be supervised and controlled is composed in part of civil service employees and often, in part, of wards of the State.

Comment: The type of menu and quantity of food to be prepared presents little opportunity for the minor variations for individual taste or selection which are possible in commercial operations. Variety is attained through variation in kinds of food and methods of preparation with an occasional introduction of a special dish. Variety has been limited in the past by the equipment and facilities available. The present program of improvement of the equipment for preparing, transporting, and serving food and of well organized kitchens and bakeries makes it possible to present more interesting dishes and greater variety in the menus within the same food allowances than was possible in the past. The present rotary ovens and the machinery for making bread, pies and rolls, reduce the hand labor and time required for their preparation and permit preparation of more baked foods. The ovens also make it possible to handle the large number of pans required to prepare attractive baked dishes. Such foods can be re-served from the original bake pans and thus increase not only the variety but attractiveness of the food as served. The introduction of high-pressure, large-volume cookers for vegetables increases the possibility of serving vegetables in more attractive form with less loss of nutrients and permits further improvements in the other phases of mass food preparation.

The Food Control System, with its fairly fixed kinds and amounts of foods, and established portion sizes places some restriction on the ingenuity of the institution food administrator. The advantages of the Food Control, however, in the majority of cases, far outweigh the restrictions. It not only assures an adequate diet but represents past experience, imposes a certain amount of variety, and acts

as a bulwark against unconsidered or unrealistic requests for change. This protection is invaluable to a new or inexperienced institution food administrator. In a large institution with a number of groups with different food requirements, the Food Control assures a sufficient quantity of different foods; but it leaves unsolved the difficult problem of supplying each group according to its planned needs. This is the responsibility of the institution food administrator but in it he is subject to considerable pressure, sometimes supported by responsible administrators, to favor certain groups or discriminate against others in the distribution of the more interesting foods. The planned Food Control is invaluable to him in such situations for it takes the question out of the zone of personal decision and places it on impersonal departmental or governmental levels.

Operation with both civil service personnel and the wards of the State present special problems to the institution food administrator. A civil service employee is classified on the basis of a prescribed training and employed to perform certain duties. He can progress by length of service within the limits of his training. There are practically no limits for the ambitious man or woman who is willing to go beyond the limitations imposed by his original training if, through further education and reading outside his hours of duty and application during duty, he extends his qualifications. There are, unfortunately, a certain number, as previously indicated who are content to advance only through regular performance of the routine duties within their assignments. They are not interested in acquiring the background to make themselves effective workers, or to assume the wider responsibilities which come with advancement. They are, in effect, competent workers within the routine field in which they have served, but misplaced and of limited usefulness in a program that requires ideas, initiative, and a willingness to change.

The institution food administrator must approve the assignment of wards of the State to duty in the culinary department, and use them according to their experience, willingness to work, ability to acquire skills, or to work as directed. The program of rehabilitation and the appointment of trained instructors in various phases of food preparation has affected the utilization of the wards in two ways--it has helped to develop their skill and has increased the productiveness of the kitchen; however, it restricts the time a ward is available for work because of other phases of the rehabilitation program and the effect of rehabilitation itself.

The operations of the culinary departments visited give one the impression of a continual round of training of new or inexperienced personnel to perform the necessary tasks that must be completed on time, and of continual efforts to improve the details of operations. The details of instruction and training are performed by the supervising cook, baker, or meat cutter but the overall assurance that the instruction is good, and that the civil servant or ward is being properly developed, while at the same time the quality of the food meets the standards desired, rest upon the institution food administrator or his assistant.

The various phases of the duties and activities of the institution food administrator have been outlined not only to indicate the need for these officers but

to bring out the complexity of their operations. It is evident that his value lies largely in his ability to be free to move about all parts of the culinary department, dining rooms, and store rooms to assure himself that the work is progressing properly, that standards of food are maintained, that personnel is engaged in assigned duties, and to help individuals develop their skills and improve their performance. It is this freedom to follow all the operations, plus his background of theoretical knowledge of food preparation and nutrition, which makes it possible for the institution food administrator to direct the preparation and service of food and also, ultimately, to improve the quality and acceptability of the meals. The necessity for having food ready on time and in the dining rooms three times a day, makes changes difficult and progress slow. There is, however, definite evidence of progress in all institutions. It was particularly evident in those in which the food administrators had the wholehearted, active support of the administrative personnel of the institution.

The procurement of food administrators and managers with suitable training and experience is difficult. Their qualifications, as detailed by the Personnel Board, are necessary and sufficient. The basic education with regard to food preparation is supplied by educational institutions of the State. For institutional work it should also include training in personnel management and relationships as well as an introduction to accounting procedures and handling of masses of data.

The operation of the culinary departments of public institutions is, as indicated above, different from commercial organizations and has details of operation which are best acquired in the institutions themselves. However, there are few interneships for dietitians available in public institutions which care for wards of the State. The techniques and procedures of the culinary departments under the program of improving food preparation and service, are at present in a state of flux; the present food administrators in California institutions are developing and improving their operations.

I believe that one of the best methods of obtaining and developing food administrators or dietitians for work in the State institutions would be to appoint promising dietitians, who have completed their hospital interneship but are without experience, as food administrator internes for a year; or they might be given assignments as assistant food administrators with a probationary period of one year. In either case the assistant should be assigned only to work with food administrators with proven ability.

Dietitian. An administrative dietitian (Civil Service rating Food Administrator Grade I or II) is required in all hospitals to direct the interpretation of the physicians' prescriptions for therapeutic diets and assure their proper preparation and service. She is responsible for the administration of the culinary department of the hospital and direction of the work of other dietitians and culinary personnel.

The departments and agencies of the State have two types of hospitals--medical hospitals and mental hospitals. There are units in mental hospitals of sufficient size and activities to be classed as medical hospitals. In medical hospitals special diets are ordered by the physician as a prescription. Approximately 15 kinds of special diets, which are deviations from the house diets, are commonly used. They are classified roughly as general, light, soft or bland, and liquid. The special diets often approximate 25% of the total diets and in some cases the proportion may be as high as 50%.

It is the concensus of opinion of dietitians that the work load per dietitian is 50 special diets. She plans the diet, writes work orders for the kitchen, furnishes the recipies for special dishes, supervises the preparation of food, checks the trays and portions of food at each meal to see that the right kind and amount of food is given with the prescribed diet to the right person. She may follow the tray up to the patient or checks to see whether the patient has eaten it and what adjustment if any must be made to make sure the patient eats enough to meet his needs.

Where there is only one dietitian, she must direct the operation of the culinary department as well as supervise the special diets. In the case of one dietitian in a small hospital she must work a broken shift or train a diet kitchen maid to follow instructions in her absence. As the size of the hospital increases, there is an increase in general work, as well as in the number of special diets. This requires additional dietetic service and more dietitians. There is not an agreed formula for the number of dietitians in relation to the size of the hospital or to the number of special diets. A symposium of hospital directors of small hospitals advised 1 dietitian to 135 patients including 30-35 special diets.

Without regard to the number of dietitians required for large hospitals, in any but the smallest hospitals there should be at least one post for a dietitian for each shift or 3.2 dietetic positions in a hospital above 100 beds, and one of these positions should be filled by an administrative dietitian.

General Dining Room Supervisor. The proper service of food is an essential part of successful and efficient use of food. In the large institutions with a number of dining rooms, such as the Department of Mental Hygiene, many problems arise which require constant attention to assure the proper service of food to obtain the maximum results. The value of attention to patients is being demonstrated in the Pilot Study at the Stockton State Hospital. While the attention given them may not be possible in the operations of a hospital in general, it was obvious during my stay at Agnews State Hospital that the patients responded to the attitudes of the attendants in charge of the kitchen, to niceties in the service of the food and to the occasional personal attentions as they were served.

There are many details of operation of a dining room and service that must be attended to for successful distribution and service of food, especially in cafeteria service, such as the following:

a) Assurance that the dining room, dishes, counters, table ware, and serving utensils are in order and present in sufficient amount before the patients arrive and service begins.

b) Determination that all food is present and in the right amount.

c) Preparation of coffee or tea and toast, or other cooking necessary done in time to be ready to serve when the diners arrive.

d) Organization of the containers of food for proper service.

e) Placement of servers and instruction in their duties and methods of procedure, if they have not had previous experience.

f) Instructions as to quantities of food to be served with necessary explanation of what exceptions must be made, if any.

g) Continuous observation of serving to see that it is properly and equitably done.

h) Assurance that another dish or pot of food is ready to replace one about to be emptied.

i) Substitution of another food or reduction in size of serving if there is insufficient food to complete the service.

j) Care for food remaining after service.

k) Direction of the clearing of the dining room, dishes or trays and the kitchen when the meal is over.

l) Constant observation and assurance of proper sanitation at all stages of the operation.

The eight-hour day and five-day week and relief result in increases in the number of persons required for service of food in a particular dining room. It is possible to prepare instructions for service but the variation in response to written instructions is so great that written instructions, even when added to in-service training, are not uniformly successful. There is need for a constant review of service and instruction for uniformly successful results. A head dining room hospital attendant is justified and provided for in some of the larger dining rooms.

The General Dining Room Supervisor would be responsible, under supervision of the institution food administrator, for a uniform standard food service in all dining rooms throughout an institution and integrate food service functions between the food preparation kitchens and the ward dining rooms; train and supervise all dining room personnel, both employees and patients; be responsible for the materials, supplies and equipment in all dining rooms.

Comment: The General Dining Room Supervisor would help to assure equitable distribution of food in a large institution by checks on the amounts of food received at the dining rooms; the numbers of persons fed; the amount of garbage, together with reports whether the amount of food received was too much or too little. Such reports keep the kitchen informed of the success of the operation.

Reports on the amount of food at the cottage ward dining rooms are made in some institutions. Their value is, however, sometimes nullified by insufficient attention to them and realization of their value. There is an interrelation of personality, responsibility and sometimes the size and shape of the container in which food is delivered. The effect of the size of container has been

illustrated by cases in which the kitchen has had to send receptacles that would be full to certain dining rooms because when the proper amount of food was sent in a partially filled large container it was invariably reported as insufficient.

Supervising Cook. The duties of the supervising cook are very similar, within a more restricted sphere, to those of the institution food administrator. He is the one who must develop the techniques to bring about the changes in the kitchen that the departmental or institutional food administrator may desire to introduce. He, with his assistants, is directly concerned in the actual preparation of food. He may have to assist with the cooking in emergencies, especially when it is necessary to salvage food that is not being properly handled. The Supervising Cook, Grade II, relieves the food administrator. He, like the food administrator, should be free to move about in his area, to keep continual watch of food preparations, and test and approve the food before it is sent to the dining rooms. On him falls the duty of indoctrinating and training new employees in the techniques and operations of the kitchen. He also is responsible for instructing the wards of the State in their duties in the culinary department. He must be sure that the food is good and is ready at the proper time. He is a man of considerable experience and his importance to the successful feeding of an institution is obvious. It justifies broadening his experience and recognizing the problems he must solve.

In some of the smaller agencies, the supervising cook plans the meals, draws supplies and issues them to employee cooks, wards or inmates as well as supervises and assists in the preparation and service of food.

Comment: There is need for an interchange of ideas between the food administrators and supervising cooks in the different institutions. Each institution has developed some methods or techniques of preparing, handling or serving food that are better than those in some other institutions. This has been evident in the course of reviewing the operations of the various institutions. The exchange of such ideas or techniques between institutions is often difficult because the successful operation may be due to such things as the special skill of some one person; a different organization of personnel; special support of the superintendent or business manager, etc. The key to the situation is sometimes found only through personal study.

Constructive criticism of the culinary operations of an institution and suggestions for their improvement come within the duties of food administrators at the institutional and departmental level. They may well recommend that a supervising cook be sent to observe a particular operation or series of operations at another institution.

The Food Administrator of the Department of Mental Hygiene is taking steps toward the development of its culinary personnel. I attended a conference for its food administrators and supervising cooks. I could see its effects in some of the institutions visited later--both in operations and in the attitude of the supervising cooks toward their work. The Department also has a mimeographed publication which is helping to stimulate interest in the improvement of food preparation and service. The contributions of the Food Administrator of the Youth Authority and Departments of Education and Corrections

were repeatedly evident in the course of review of the operations of these institutions.

"Floating" Supervisory Cook. (The term "floating" is used for lack of a better one, "Special Supervising Cook" might be better.)

The development of the supervising cook and the best use of his training, experience and abilities in the culinary department is the immediate responsibility of the institution food administrator or manager. In the absence of a food administrator or manager, the supervising cook is usually immediately responsible for the culinary department and its operations and the technical phases of his development fall on the department food administrator. The possibilities of making an efficient and effective use of the food and facilities provided will be facilitated, as indicated elsewhere, through the use and development of supervising personnel; there are obvious possibilities of considerable improvement in operations and actual savings in money.

The procurement of supervising cooks is largely through advancement of civil service employees, from within an agency or by transfer from another agency. A program of in-service training is being developed. Much training could be accomplished through on-the-job training and conferences, as well as provision of a demonstration kitchen to which cooks could be assigned when necessary for indoctrination or experience. Newly appointed supervisory cooks could profitably be assigned to a demonstration kitchen before taking up their new assignment.

Training, indoctrination and development of supervising cooks would be facilitated through the creation of a position of "Floating" Supervising Cook in the Departments of Corrections and Mental Hygiene, and in the Youth Authority, with sufficient funds for travel. The position could well be assigned to the office of the department food administrator, to be filled temporarily by transfer or first appointment. It could then be used as required, such as training in the department food administrator's office, at the demonstration kitchen, for indoctrination or training, special assignment at a facility for training of the individual himself or the cook on duty, or for the solution of critical problems at an institution.

Comment: There is need for supervising cooks for the forestry and road camps at which inmates are employed, to assure the preparation of suitable meals for the civil service employees as well as inmates at these camps. At present the forestry camps are supervised by the culinary staff of the institutions to which they are attached. (San Quentin has 3 permanent and 5 seasonal camps; Soledad has 2 permanent and 2 seasonal camps and Chino 4 permanent camps.) The number of camps and persons being fed, and their distribution and the possibilities of making better use of the food and of reducing the food usage, justify the provision of a supervising cook for duty with the camps attached to each institution. The early appointment of a "Floating" Supervising Cook to the Department of Corrections and his use in one set of camps should produce evidence that such supervision will justify permanent positions of this kind.

Number and Kind of Personnel Required for a Culinary Department. The determination of the personnel required for the culinary department of an institution is affected by a number of factors, such as the number of kitchens and dining rooms, their location, the extent to which they prepare the entire meal or only part of the meal and the method of food service, as well as the amount and kind of inmate help furnished or available. The following material and tables on "Estimates of Personnel Required to Staff the Food Service of Institutions of Various Sizes on the Basis of the Number of Persons at a Meal from One Kitchen" give a first approximation of requirements for personnel was developed with the assistance of the Food Administrator for the Youth Authority, Mrs. Jane Sedgwick Pirkey, as the result of her experience with State institutions and with the development and operation of the Food Control System. Her experience with regard to the number of experienced persons required to prepare meals and supervise culinary operations was particularly useful.

The accompanying tables, giving the estimates of personnel required to staff the food service operations of institutions of various sizes on the basis of the number of persons at a meal fed from one kitchen, are intended as a base of reference. They may need to be modified with experience and must be considered and modified in relation to the special needs or circumstances in particular institutions.

The number of culinary workers recommended is based upon the application of a formula for calculating the total persons required, developed by John F. Johnson of the Restaurant Administration Program of the University of Chicago. The formula is: $y = 2.99 \pm 0.82 \bar{x}$. In this formula y represents the number of employees and $\bar{x}$ the number of thousands of meals served in a month. The formula is based on a statistical analysis of the labor forces in 171 cafeterias and appears in a report published in Institutions Magazine, Vol. 28, No. 3, March, 1951, p. 2. Calculations based on this equation give a first approximation of the number of kitchen and dining room helpers, whether employees or wards of the State, required to perform the work in preparing and serving food in one kitchen.

The number of cooks, bakers, meat cutters, and supervisory personnel required depends upon the size of the population served. Calculations are, therefore, presented for various numbers of persons served at a meal with the food prepared in one kitchen. The number of persons required to fill a post is determined by the 8-hour day, 5-day week.

The number served at one meal is used as the measure of size of institutions. If the population figure is used the meal unit is estimated for each shift because of the limitations of a straight shift. The number of immediate supervisors, cooks, and kitchen helpers must be calculated for the meals at which shifts do not overlap. The discussion relates to additions to the personnel for the previous population. Additional kitchens would require the same staff for actual preparation but less supervisory personnel above the rating of Supervising Cook, Grade 1.

Regardless of the size of the institution a person of supervisory grade who is responsible for the immediate planning, organization and operation of the culinary department is required. It is essential that a Supervising Cook, Grade 1, be on duty at each shift of more than one cook, to supervise the distribution of food and food usage and assure standard quality production. In the smaller institutions he assists with the cooking as well as supervises the over-all

TABLE III

ESTIMATES OF PERSONNEL REQUIRED TO STAFF THE FOOD SERVICE OF INSTITUTIONS OF VARIOUS SIZES ON THE BASIS OF THE NUMBER OF PERSONS AT A MEAL FROM ONE KITCHEN

INSTITUTIONS WITH LESS THAN 600 PERSONS AT A MEAL

Classification of Personnel	Persons at a Meal (Meals per cook in parenthesis)									
	0 - 200		201 - 400 (200)		201 - 400 (With a baker) (200)		301 - 600 (With a meat cutter) (300)		301 - 600 (Without a meat cutter) (300)	
	Posts	Persons	Posts	Persons	Posts	Persons	Posts	Persons	Posts	Persons
Food Administrator Grade II (Manager)									1	1
Food Administrator Grade I (Manager)			1	1	1	1			1	1
Supervising Cook Grade II							1	1		
Supervising Cook Grade I		1		1		1		3		3
Cooks	2	2.2	4	5.9	4	4.9	4	3.9	4	3.9
Baker					1	1	1	1	1	1
Meat Cutter							1	1		
Total	2	3.2	5	7.9	6	7.9	7	9.9	7	9.9
Calculations for Kitchen Help										
Total Food Service Personnel Y= 2.99 + .82X										
Thousands of Meals per Month		13.5		27		27		54		54
Total Employees Required		14.06		25.09		25.09		47.19		47.19
Total Positions Estimated (above)		3.2		7.9		7.9		9.9		9.9
Kitchen Help		10.86		18.19		18.19		37.29		37.29

Difference: Employed, or equivalent patient or inmate help with supervision on the basis of 1 employee to 15 adult patients and 1 employee for 8 children.

TABLE IV

ESTIMATES OF PERSONNEL REQUIRED TO STAFF THE FOOD SERVICE OF INSTITUTIONS OF VARIOUS SIZES ON THE BASIS OF THE NUMBER OF PERSONS AT A MEAL FROM ONE KITCHEN

Classification of Personnel	Persons at a Meal (Meals per cook in parenthesis)							
	601 - 1500 (400)		1501 - 3000 (600)		3001 - 4500 (800)		4501 - 6000 (1000)	
	Posts	Positions	Posts	Positions	Posts	Positions	Posts	Positions
Food Administrator, Grade II (Manager)	1	1	1	1	1	1	1	1
Food Administrator, Grade I (Manager)			(1)*	(1)*	(1)*	(1)*	(1)*	(1)*
Supervising Cook, Grade II		1	1	1	1	1	1	1
Supervising Cook, Grade I		3		3.2	2	3.2	2	3.2
Cooks	4-8	6.6-10.8	10 (6-10)	10.8	11 (8-11)	15.3	10	16.9
Baker	1	1	2	2	3	3	4	4
Meat Cutter	1	1	2	2	3	3	4	4
Kitchen Help								
Total	8-12	13.6-17.8	16 (12-16)	20	19.25	26.5	22	30.1
Calculations for Kitchen Help								
Total Food Service Personnel Y = 2.99 + .82X								
Thousands of Meals per Month	72-135		270		405		540	
Total Employees Required	62.0-113.7		223.99		335.1		445.8	
Total Positions Estimated	13.6-17.8		20		26.5		30.1	
Kitchen Help								
Difference: Employed Inmate or Patient Helpers	48.4-95.9		203.99		308.5		415.7	

*In institutions which have a large number of dining rooms, a medical hospital or a large percentage of special diets an Institution Food Administrator Grade I may be required, together with a sufficient number of dieticians to cover the diet therapy work based on the average number of special diets prescribed.

activities of the kitchen. As the size of the institution increases the activities of the personnel are sufficiently varied and the need for responsible supervision increases to such an extent that a supervising cook is justified to spend all of his time in seeing that the kitchen functions effectively and efficiently and in meeting the problems of ordering and planning the meals. His relief in the smaller institutions of this size comes from one of the cooks.

Relief. With the development of the size of the institution, the time, knowledge and experience required for the operation of the culinary department justifies progressively; a supervising cook, Grade II and bakers and/or meat cutters, and later a food administrator or manager. At each level of responsibility there is need for relief for week-ends and days off. The person in the next lower level is capable of assuming the routine responsibility of the position for short periods of time. He can make decisions according to the policies and practices already developed and established.

There is, thus, an inter-relation in the use of various supervising personnel for relief between the institution food manager or administrator grades II and I (required for the general over-all planning, organization and supervision) and the supervising cook grade II and I, varying according to the size of the institution. The supervising cook grade II or I is required at all times for the supervision of the actual preparation, production and service and distribution of the food. Since the food administrator or manager is not supplied with a relief for leave, vacation, week-ends or their equivalent, and sickness, the supervising cook grade II or I, depending upon the size of the institution, is required for relief. (There will be institutions where its size or special duties will require an assistant food administrator. Such an administrator would take over most if not all the professional and administrative relief of the food administrator. He might well divide some of the routine phases of the work with the supervising cook.) Where there is a supervising cook grade II and several supervising cooks grade I one of the supervising cooks grade I should relieve the supervising cook grade II.

There is a certain inter-relationship of the baker and/or meat cutter and the cooks; the cooks or supervising cooks do all phases of food preparation in the smallest facilities. As the work increases the cooks must spend all their time in actual cooking and specialized personnel for baking or meat cutting are justified. In borderline cases there is an inter-relation between the cooks and the baker and meat cutters for relief. This inter-relationship and substitution is contemplated in the suggested outline of personnel for the culinary departments of institutions of various sizes. At the levels of 201-400 and 301-600 persons served at a meal two possibilities are provided according to whether or not a baker or baker and a meat cutter is provided respectively.

Comments: Estimation of Relief for Supervision.

A Food Administrator or Manager needs 0.58 positions to relieve him. This is supplied by the Supervising Cook, Grade II.

A Supervising Cook Grade II position uses 0.58 positions to relieve the Food Administrator.

A Supervising Cook Grade I relieves Supervising Cook Grade II and another the Supervising Cook Grade I, or 1.16 positions. This is not deducted from the cooking personnel on the basis of the number of meals per cook.

The number of cooks' posts required is calculated on the basis of meals per 2 shifts; for example for 400 meals served at one time for a population of 1600 persons:

4 cooks posts A.M. shift

4 " " P.M. shift

8 " " x 1.58 for positions = 12.64 positions

If 3.2 Supervising Cooks Grade I are used as positions only the position time which is used for relief of Supervising Cook Grade II is deducted, or:

3.20
1.16
2.04 positions applied to the 12.64 positions.

12.64 minus 2.04 = 10.60 cooks positions

Vacancies in positions. Provision is required for vacancies in positions, such as the result of prolonged illness or turnover. Where the experience of an institution shows that a position is vacant two thirds of a year as the result of turnover and statistics on vacancy, an additional position is justified, e.g., where 5 positions are required to maintain a complement of cooks, 1 additional cook position would be required to maintain it if the statistics show that one position was always vacant. The money required to finance such a position, if not used, should be reflected in a salary saving.

Under 150 meals served at one time in one dining room, in which the bread is purchased or provided and the cook does the meat cutting (with the exception of unit hospitals).

Cooks. Two posts, 365 days a year. The combined posts require 730 eight-hour days and each man works 230 days a year, or 3 cook positions and 0.17 position overtime pay and vacation relief. One of the cooks should be a Supervising Cook Grade I, to assume the responsibilities and planning for the operation. There should be one cook on duty at all hours the kitchen is open.

Over 150 meals served at one time when a meat cutter is not present as such or as an instructor of meat cutting.

A Food Administrator, Grade I, and a Supervising Cook, Grade I, or a Supervising Cook, Grade II, should be added. The additional post is necessary because of the additional meat cutting as the population increases as well as the volume of food to be prepared. The additional work load requires more time of the cooks on duty with less time available for planning and supervision of the staff in general. A Food Administrator, Grade I, can function and assure more acceptable meals, if there is a Supervising Cook, Grade I, also on duty as part of the cooking staff, to relieve the Food Administrator, Grade I, and do the meat cutting. The need for adequate supervision requires that sufficient cooks be available to prepare the food.

Over 200 meals served at one time. One cook on duty for each 200 meals, or part thereof, provided a meat cutter or baker is not provided. The additional cook is necessary for each shift because one man is engaged in preparing food, such as meat and vegetables, preliminary to the meal preparation and in baking.

Over 300 meals served at one time. Above 300 meals at one time, it is desirable to add a baker. The baker permits one cook to take care of 300 meals if a meat cutter is not furnished. If a meat cutter is provided as well as a baker, then one cook should be furnished for each 400 meals served at one time.

A meat cutter is not required until the amount of meat cut exceeds 1600 pounds carcass weight per day. A meat cutter is necessary, however, when the meal count at one time is 500 if meat cutters are classed as vocational instructors and devote part of their time to instructing the wards.

Over 1500 and to 3000 meals at one time. At 1500 meals and above the formula changes. There is no need for additional cooks, butchers or bakers. The increased personnel is covered by kitchen helpers. This means a cook for 600 meals at a time and the additional baker and meat cutter.

An additional meat cutter and baker is required for each 1500 meals served at one time. This is based on experience and ability to work. In some cases, the increase may utilize two meat cutters or two bakers depending upon the character of the work.

Over 3000 and to 4500 meals at one time. Add an additional baker and meat cutter. With these employees present to relieve the kitchen force it is not necessary to provide additional employees to compensate for the days off. The ratio of cooks to meals is 1:800 meals served in one day.

Over 4000 and to 6000 meals at one time. Add an additional baker and meat cutter. The ratio of cooks to meals at one time is 1:1000. This provides for one cook for each dish on the menu, and another meat cutter and baker. The lack of increase of cooks is related to the size of steam cookers and the ability to watch them, on the assumption that one cook can watch and supervise the kitchen helpers in caring for three 150-gallon pots.

Kitchen Helpers and Dining Room Helpers. The number of employed kitchen and dining room helpers used in an institution is related to the number required for duty or for supervision of patient and inmate help. One employee should supervise or direct 15 adult patients or adult inmates, or one employee to 8 children. Patients and inmates on the average are equivalent to only 1/2 employed person.

Additional Kitchens. Each additional kitchen requires 2 posts for Supervising Cook, Grade I, beyond that required for the central kitchen and supervising staff, to provide supervision morning and afternoon. They are considered part of the cooking personnel.

As the kitchens increase, the cooking personnel and Supervising Cooks, Grade I, are based on the number of meals served at one time from each kitchen added. When the number of meals at one time reaches 1000, a Supervising Cook is required for each shift or 3.17 Supervising Cooks, Grade I. This Supervising Cook is the head cook and assists with the cooking. This affects the number of cooks required. He manages all the work on the shift and supervises the activities of

the cooks and is responsible for the distribution of food and food usage and the quality of the food produced. The institution cook works under direction. He is not qualified to take over the production of a meal.

There is not enough employed personnel in most institutions in my opinion to give adequate supervision to the patients or inmates, many of whom are called upon to use expensive equipment and have access to considerable stores of food.

Calculations on reduction of cost with good supervision. The review of the operations of the State in feeding people indicated, rather early, that sufficient food was being provided to meet the nutritional needs of its wards. It was also obvious that the results of the preparation and service of practically the same food varied from institution to institution. This meant either difference in equipment, in the capabilities of the personnel, or the availability of trained or trainable wards to assist in the work. The training and skill of supervisory personnel in organizing the work and utilizing both the employed personnel and the wards appeared to be the key to the differences. This has contributed to the recommendation for the provision and training of additional supervisory personnel as a means of obtaining more satisfactory results from the food available. Better meals through superior operations are likely to result in better consumption of food and less waste, as well as more contented wards. Reasonably contented wards require less supervision.

It is a well known fact that people can be fed with a fair degree of satisfaction, even when the menus and service are poor if liberal amounts of palatable and expensive food, such as meat, fruits and desserts are provided along with potatoes and bread. Of course this does not assure an adequate diet. The question arose as to the relative cost of supplying additional food such as meat as compared with providing more and better trained personnel to make better use of the foods now available under the Food Control. To make such a comparison requires certain assumptions with which there may not be general agreement, but it seemed worth exploring.

The comparison made is based on the following assumptions:

(a) Cost of supervisory personnel in an institution with a population of 5,000 for the period of a month. This provides a large number of wards to which to apply the differences.

(b) The cost of three meat allowances: very high (1.0 pound per-person-per-day); high (.75 pound); moderate (.50 pound).

(Meat is one of the most expensive items of food. Satisfaction, but not necessarily good nutrition, is attained by the use of generous allowances of meat with potatoes with a few other foods). This consumption of meat is between 0.8 to 1.0 pound of carcass meat per person per day. Very satisfactory meals can be prepared using 0.5 pound, with a greater variety of other foods. An intermediate allowance of 0.75 pound is included for comparison. Calculations are made on the relative costs of providing 1.0, 0.75 and 0.5 pounds of carcass meat.

(c) The cost of carcass meat at $0.50 per pound.

Cost of meat for 5,000 persons	Per day	Per month
(1) 1.0 pound per person per day	$2,500.	$75,000.
(2) 0.75 " " " " "	1,875.	56,250.
(3) 0.50 " " " " "	1,250.	37,500.
(4) (1) minus (2) Saving in cash of .25 pounds per person per day		18,750.
(5) (1) minus (3) Saving in cash of .50 pounds per person per day		37,500.

Employees' Salaries:

Operating Personnel (required in all operations)

3.2	- Supervising Cooks	@ $325 per month	$1,040
16	- Cooks	@ 295 " "	4,720
1	- Baker Grade II	@ 325 " "	325
3	- Bakers Grade I	@ 295 " "	885
1	- Meat cutter, Gr. II	@ 325 " "	325
3	- " " " I	@ 295 " "	885
			$8,180

Supervisory Personnel (Used with lower meat allowances and costs)

1	- Food Administrator	@ $436 per month	
1	- Supervising Cook Gr.II	@ 376 " "	
1	- Clerk typist	@ 243 " "	
		$1,055 " "	

If supervisory personnel were added to the operating personnel and they were able to reduce the quantities of meat used, and provide satisfactory meals as indicated, the ratio of salary ($1,055) to cost of meat would be

@ 0.75 pound per day = a savings of $18,750 per month or $17.78 per dollar for additional salary investment.
@ 0.5 pound per day = a savings of $37,500 per month or $35.54 per dollar additional salary investment.

On the basis of these assumptions it appears that provision of the three supervisory employees at total monthly salary cost of $1,055, through planning, organization and control could provide palatable and nutritious meals, with a much lower meat allowance and greatly reduce the cost of meals. Other savings are possible through reduction of waste. A saving of one cent a day, or approximately two slices of bread, would be $150 for the same institution.

Savings of this type are not accomplished over night. They require planning, organization and training and must be introduced into the day to day work of preparing food. Once a change or technique desired is obtained it requires continuous routine observation, vigilance and checking to keep it from reverting to the old or easier way. Good operations result in a continuing reduction in the costs of operation. They may not be obvious each quarter or year but are evident through comparison with previous costs and success at the same value of the dollar.

The Food Controls as has been indicated, carry an overage to take care of the failures and difficulties of operation. There are limits below which it is not profitable to go. On the other hand, it is important for the Superintendent, Business Manager, Food Administrator and Supervising Cook to keep constantly in mind that there is an overage and to reduce it as much as possible. One of the difficulties of a food allowance is that it is considered to be something to be used up rather than as upper limit which should not be exceeded except for good cause. The nutrition account is useful because it offers an opportunity to review operations monthly or at least quarterly. If the meals have been successful at a lower level of intake and this can be maintained the food allowance should be reduced.

Where considerable changes have occured and there is a question as to their propriety or where there is belief that the food allowances require adjustment upward rather than downward - the institution physician should review the nutritional status of the population for assurance that it is within normal limits. It is desirable for institutions to measure and weigh their charges at periodic intervals under uniform conditions in order that all measurements and weights may be comparable. It is necessary to correct for or acknowledge seasonal clothing and trends in body height, and weight or character of the population before drawing conclusions as to the significance of a difference observed. The over-all cost of feeding as well as public responsibility for it requires that some checks and balances be maintained on the operations to make sure they are effective.

RECOMMENDATIONS - PERSONNEL

The provision of sufficient supervisory personnel, their development and, through them, the training, supervision, development and control of food preparation personnel, will be the most important step toward good utilization of the food provided by the State and economy in operation. The Food Control System as established is sound and is operating fairly well. The quantities of food in the Food Controls and the method of financing them provides sufficient food for the health and welfare of the wards of the State. The personnel provided possess varied skills and aptitudes. There is a considerable turnover in cooks. Each new cook must be oriented and integrated into the culinary department and the wards suitably used and supervised. Good and sufficient supervision should not only provide better meals at the same cost but should result in ultimate savings in the relative per capita cost of feeding. Such savings will be accomplished gradually, as the result of the constant supervision supplied by the food administrators and supervising cooks who keep in mind the interests of the taxpayer as well as the possibilities of perfecting the operations of the culinary departments, achieving better results with less waste.

Improvement in the use of personnel will be furthered through:

a) Preparation and publication of a manual which will give newly appointed employees an understanding of the policies and overall operation of the Food Control System and the responsibilities and inter-relationship of individuals in all posts concerned in it. It should outline the duties of each classified employee and the uniform procedures and practices in use. The preparation should begin in the near future.

   Comment: The manual should cover the food control operations in all the departments and agencies. In the course of its preparation many differences in methods of operation in the departments and agencies will be seen and they should be eliminated in so far as possible or formally established if obviously appropriate for certain agencies only. The operation of the Food Control System is basically the same in all agencies and the necessity for deviations should occur only at the institutional or facility level and within the basic concepts of the Food Control System.

   Food Control Manuals have been prepared in the Department of Corrections and the Youth Authority. The publication of the Bureau of Prisons, U.S. Department of Justice on "Operating the Culinary Department" 1950, contains material which may be helpful, at least in stimulating ideas.

b) Review of personnel requirements with provision for the employment of additional personnel as needed, particularly at the supervisory level. In this connection a policy on the extent to which inmate and patient personnel are to be used in the food service department in the production, preparation, distribution, and service of food should be established and implemented.

Comment: Special consideration should be given to the provision of at least one supervising cook in the Department of Corrections, Mental Hygiene and Youth Authority as a floating supervisor, possibly attached to the Department Food Administrator, to fill the place of supervising cooks in training and for relief in general. Such a position could well be used for rotation of supervising cooks rather than as a position to which a person would be assigned permanently. Such rotation would help in the development of the supervisors and solve some of the problems of assignment for training.

c) A program for in-service training, supervision and development of the culinary personnel, at the institutional level. This will assure better use of the present food allowances, full use and care of new facilities and equipment and improved sanitary standards in food handling.

Comment: Future progress will be determined through the training of personnel both through improved basic training before or preliminary to employment (reflected in higher standards for employment) and the daily in-service training provided by the departmental and institutional food administrators and supervisors. As a matter of fact all the personnel of the food service program are engaged in in-service training. From the food administrator to the kitchen helper and the patient working in food preparation, each passes on some of his training and experience to others.

The training and development of the existing personnel should lead to improvements in management, with better use of food and more acceptable meals. It should be possible in time to reduce some of the present food allowances which include considerable overage now necessary to cover losses due to poor management and inefficient workers, and thereby decrease the relative cost of feeding operations.

d) Development of material for in-service training. This should include; texts, lectures, visual aides, leaflets and posters. The leaflets and posters should deal, serially, with the basic problems of the culinary art, food preparation, care and use of equipment and sanitation. It should present "why" as well as "how" cooking or other procedures are carried out.

e) Provision to cover extended vacancies of established positions to maintain effective food service.

Equipment in Institutions.

The equipment in the various institutions and agencies is sufficient to produce wholesome food on time. Some of it is obsolete and in such a state that the cost of upkeep is greater than the cost to replace it. In certain cases the production of meals is hampered by shortages of suitable equipment and the crowded condition of the preparation areas. In others, the facilities for service of food are inconvenient and unattractive.

The needs of the institutions have already been presented by the business managers. The general program for rehabilitation of present facilities and kitchens or provisions of new food service areas and equipment now in progress will remove most of the present deficiencies. The basis for planning of new kitchens and dining rooms have been developed by the Division of Architecture, Department of Public Works, with the necessary assistance of department food administrators who understood the practical problems of operation.

In general, I have found the objectives of the State in providing suitable equipment, space, and facilities for food preparation and service to be sound. The basic concepts of procedure to be used in planning are equally sound. The personnel of the Division of Architecture with whom I have discussed the problems are constructively critical of requests for changes or new construction and cognizant of need for the protection of public interests. The basis of determining the needs of institutions are direct and analytical.

The remodeling of old institutions and the planning of new institution kitchens should be based on a detailed analysis of the segments of the food preparation and service areas of an institution in relation to the character and needs of the population to be served, the employees required to operate the culinary department and the wards who may assist in the operation. It begins with the food control, the food allowances planned for the population; the basic menu pattern to be followed; the size of portions to be served. It develops the need for space in the kitchen and dining room on the basis of the quantity of food that must be stored, handled, cooked, transported and served as well as the personnel involved.

This method of approach and use of details for architectural planning requires consideration of the necessary space or equipment for effective operation, such as the design of mechanical equipment, adequacy of refrigeration and dry storage space, as well as provision for garbage and trash disposal, and for sanitation facilities for kitchen employees. It provides easy access for prepared and unprepared food distribution as well as relatively unobstructed vision over culinary operations from a central point, such as the Supervising Cook's office, required when the supervising officer is performing necessary desk work. It is common knowledge that the routing of the work of a kitchen to assure the flow of food from point of receipt to final serving is essential for effective operations. It helps to reduce the personnel required and increases the output.

Excellent examples of the information required for consideration of the plans for a culinary department have been presented in a memorandum for the Department of Education and planning data for the Department of Corrections. (Memorandum, Mrs. Jane Pirkey, Food Administrator, Department of Education, to Dr. Heuber R. Stoltz, December 12, 1950, Subject: "Architectural Culinary Planning for the Northern

California School for Cerebral Palsied Children"; Mimeograph by Jane Sedgwick, 10/12/49, on "Commissary and Kitchen Food Storage Space Requirements"; Mimeograph Jane Sedgewick, Food Administrator, 1949, "Planning Data for Culinary Units for California Correctional and Penal Institutions.")

The plans for food area construction should be reviewed by the department food administrator and/or institution food administrator at all stages of planning prior to final approval. These officers know the immediate details of the operation of a culinary department and in the case of the institution food administrator know the especial problems of the particular institution concerned.

The complements of equipment which are not fixed or mechanical must be developed by the department food administrator on the basis of the type of food service, food preparation contemplated, storage space and its location, cooking and serving utensils, cleaning equipment and the number of personnel. In the older institutions complements of equipment need to be established in relation to the food control, on the basis of a standard complement of equipment required for its use (and not to part usage) and the equipment or inventories of equipment on hand. Replacements or additions should then be based on an established complement. In other words, they should work gradually toward complete equipment on the desired basis, rather than the maintenance of conditions as they are.

Remodeling of, or additions to, old institutions requires a complete review of the present establishment in relation to the aims and objectives of the food controls. It includes an analysis, room by room, of the space available in relation to its use and function in the overall production of food; e.g., some kitchens are compartmentalized while in others a number of functions are accomplished in one area. In the first case, equipment for similar use may need to be duplicated in two or more rooms or areas and not where it is available to more than one person or group of persons where a number of functions occur in one area. A different type of equipment may be needed in the latter case or the number of personnel required to operate it may be different.

A pattern for determining needed equipment has been presented in a bulletin entitled "Small Equipment for the School Lunch" by the Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, in cooperation with the Food Distribution Program Branch of the Production and Marketing Administration, U.S. Department of Agriculture, June, 1947. This material must, of course, be adapted to the particular need of the institutions involved. The State of California with its program for the development of well equipped culinary departments in its institutions should, with time, be able to reduce its experience to a formalized statement which will be a valuable contribution in this field.

Use of Food Conveyers - The transportation of food from a central kitchen to cottages or centers is facilitated by suitably designed and constructed food conveyers or trucks. The use of conveyers and trucks enables the kitchen force to assemble the food for a complete meal after which it is transported by pushing within the same building by hand, or is transferred to motor trucks for transportation to the place where it is to be served. The success of the use of food trucks and conveyors is determined in part by the following:

a) The rapidity and neatness with which the receptacles for food can be filled

from the stock pots or kettles in the kitchen.

b) Facilities for transportation and protection of baked goods both from the bakery and from ovens in the kitchen.

c) Arrangement of the kitchen and loading platforms for storage of conveyors and containers, filling and transfer of food to and from the motor trucks

d) Construction of platforms and entrances at the place of service of food for unloading and return of food conveyors.

e) Suitable construction and arrangement of counters for service of food directly from the food conveyors and from pans containing baked or roasted foods directly from the pans as they come from the ovens.

f) Protection of food from contamination and theft during transport.

g) Adequate facilities for washing conveyors and containers.

Most of these problems have been partially solved in one way or another in the present construction program. The use of the commercial equipment available that can be moved on rollers has demonstrated the advantage of the speed and orderliness with which food could be handled. It was equally obvious that further attention is needed for the development of food trucks and conveyors adapted to the special problems of serving food in dining rooms serving 60 or more persons.

The electrically heated food conveyors used in ward feeding in hospitals are not entirely satisfactory for use with larger numbers of persons, either for service or protection of food from loss of heat. The food conveyors available are suitable for transportation of a complete meal of hot and cold foods for 30 people in one conveyor.

When the population is greater than 30 the bulk of food is so great that the hot and cold food needed for a menu cannot be carried in one conveyor. In such cases one conveyor is required for hot food and one for cold food; or part of the food such as bread, milk, butter and salads must be transported in separate containers.

When the bulk of the food reaches 3 gallons for the main dish, the present commercial electrically heated food conveyor comes in competition with the aluminum stock pot with a clamp cover and other means of transporting the cold foods. Such pots of 3 gallons, or more, will hold heat or remain cold long enough for practical purposes and, in general, are satisfactory for normal use. Bulk lots of 5 gallons, or more, will remain hot for more than 3 hours, as determined by the Mechanical Engineering Section, Division of Architecture. Furthermore, the bulk of the items of a meal are not required to be hot but are served cold or at room temperature.

The Stock pots can be transported on trucks or placed directly in motorized trucks, and moved with facility. The other food can be transported in closed and, if necessary, locked pan racks can be used to hold bake pans, bread and cake. The pots and pans can be placed on a suitably constructed counter, heated or cooled as required, which brings the top of the container to a level suitable for food service.

The present commercially designed food conveyors are primarily designed for inside use where elevators are available and they can be wheeled short distances on the level along corridors. (The problems and dangers of pushing a food conveyor up and down inclines in hospitals was evident in the course of the survey.) They are not entirely suitable for transportation in motorized equipment to dining rooms feeding 100 or more.

There is need for a thorough study and testing of food distribution with motorized equipment and design of a means of and equipment for, food transportation and service in institutions. Such a study should begin with the simple unheated equipment with and without insulation and progress to heated equipment. The observations should cover the size containers required for satisfactory transportation and service in relation to multiples of population. It should also recognize the need and desirability of the transportation and service of baked food in the original containers. It will be possible to test the new or modified equipment with the present buildings and motor trucks.

The study is justified on the basis that the use of wheeled food conveyors is desirable, and the original cost and replacement of the present and immediately proposed equipment. A study of food transportation should be made soon; before a great deal of money is spent on buildings and conveyors. New plans and programs can then be developed on a sound basis. The Department of Mental Hygiene has authorized a study of special food conveyors by the Mechanical Engineering Section of the Division of Architecture.

There is also need for a review of the present techniques, design of motor trucks and methods of handling stock pots and food in and out of the kitchen to determine the most satisfactory procedure with the equipment available. It was obvious, in the course of visiting institutions, that each institution has solved one or more of the problems with the equipment available and its limitations. In the course of their operation, various institutions have developed ideas and equipment that would be useful to all institutions, and a pooling of this experience is desirable.

Interagency Study of Equipment and its Use. The development and use of equipment suitable for successful operation of the culinary departments of institutions is of interest to all agencies and should not, of necessity be chargeable to the appropriations of a single agency, except for convenience. The field is of such importance to the State in relation to economy that it could profitably be covered by a specific appropriation for such work. The placement of the funds is a matter of policy. It might, however, be made to the Director of Finance for expenditure on plans for study and testing recommended by an interagency committee concerned with equipment and its operation, such as "The Committee for the development of training material on the operation, maintenance and sanitation of mechanical and fixed institution kitchen equipment", Chairman, W.K. Smith, Training Division, Personnel Board; or one specially appointed to consider equipment. Such a procedure would assure the unified thought and experience of all agencies concerned.

Standardization of Table Service in Relation to Portion Sizes Used in Serving Food. There is need for the standardization of table service in relation to the size of food portions. It would have a definite psychological value in the service of varied and attractive meals, facilitate the effective use of the food controls and thus reduce the cost of feeding. With meals of a limited number of items only, rather large portions of food are necessary for satisfaction. As the number of items are increased the portion sizes are decreased so that the same total quantity or volume of food is served. This requires smaller dishes, cups and bowls and numbers of partitions in serving trays, with ladles for service of portions sized accordingly, and in sufficient variety to permit the use of a ladle adjusted to the size of the established serving.

The basic food allowance is established in pounds-per-man-per-day in stated classified food groups. The food allowances for the various foods are selected not only for their nutritional value, and the stomach capacity of the individual, but they are related to a basic menu pattern on the basis of standard serving portions plus a reasonable additional quantity for second portions for the extra hungry.

These standard serving portions are controlled at the time of service by the size of ladles selected as well as the dish, cup or bowl or compartment tray used to serve the individual a meal. One of the difficulties in sizing portions to make attractive service is that the older facilities are equipped with dishware which holds too great a volume. Unfortunately these are often replaced with identical ware instead of ware adjusted to portion sizes on the basis of a standard complement.

If the tableware is incorrectly sized in relation to the standard serving portion, the psychological reaction of the inmate, pupil, or employee is one which is difficult to control. For example, if a cup holds 16 ounces and is filled with a standard portion of 8 ounces, it appears to the customer as though he had received but 1/2 of a portion; conversely if the cup is 8 ounces reasonable satisfaction is attained with 6 or 6½ ounces.

There is evidence that some agencies are cognizant of this problem and are proceeding to solve it as equipment is replaced.

The Division of Architecture has cooperated in the planning of new facilities on the basis of standard service portions and new facilities have been equipped with table ware of a size which is related to the size of portions used in menu planning and to the food allowances.

It is recommended that work be initiated leading to establishment of standard specifications for table service related to the standard size servings commonly used in the food controls. This work might well be undertaken by the Department of Finance and the department food administrators. Complements of table service showing sizes of dishes and volumes of servings used are also needed.

Food Service in Institutions.

The method of service of food and the attention given to the manner in which food is served determines, to a considerable degree, the success of culinary operations. The type of service adopted for an institution is related to the population to be cared for and its method of control; the construction of buildings and their use; the number of employees and wards required to operate as well as the satisfaction obtained from the food. The whole program of food preparation (choice of foods, planning of menus, preparation of food, care and protection of food in transportation to the dining room) may be nullified by untidy surroundings, improper attention or poor methods in the service of food. There is something personal involved in the service of food which is reflected in the diner's attitude toward the food itself. This is one reason why it is desirable to develop good attitudes as well as good habits in those who serve the food, and for a cook to be present when possible, when food is served in cafeteria style. He is interested in seeing that his product is well handled and received and he receives recognition for his work if it is particularly good.

Comment: The relationship between the food service and the diner merits attention. In all cases the food should be neatly and carefully, though rapidly served. The extremes of the problem are seen in the correctional institutions where communication between the server and diner must be limited since it often leads to discrimination in portion sizes. In some cases it has been found necessary to place a partition just above the food, in cafeteria service, so that the diner can not see the server.

An example of good service was observed in a mental hospital, where the small attentions of the attendants, even though only an alert inspection and control of the serving of food, was reflected in the attitude of the patients. The differences in response were obvious with different sets of attendants.

Good service in mass feeding requires attention to a number of details to assure good food service, such as, that the food be served:

a) at the appropriate time

b) properly and neatly

c) equally; particularly the most interesting and attractive foods such as meat and desserts

d) in reasonable portion sizes of all foods to prevent waste; with distribution of second helpings of attractive foods to everyone that wants them or what is left to certain groups in rotation

e) with additional servings of basic foods, bread, potatoes, and vegetables, to satisfy the needs of those who require more food to satisfy their appetite, provided the food previously served is eaten

f) in neat and attractive surroundings

g) with an element of personal attention.

Types of Food Service in Institutions

A) Cafeteria

In cafeteria service the diner picks up individual servings of food placed in dishes or on trays and carries his food to the table. He may or may not have a choice of different foods in the same course. He does have some control over the quantity of each dish chosen. The diner may return to the serving counter for additional food, if it is available.

There are variations in the provisions for second helpings and for bread, etc. In some institutions bread is placed on the tables so that the diner completes his meal without returning to the counter. Coffee and additional quantities of food remaining after all are served the first time are sometimes carried to the tables, etc.

The soiled dishes are:

(1) disposed of by the diner when he is through

(2) left on the table and collected after the meal by a food service worker.

Comment:

Cafeteria service has particular advantages in the distribution of food because of the ability to control and supervise portion size and number of servings and the ability to keep food hot or cold until it is served and about to be eaten. The control of distribution applies to all food and especially the more attractive and expensive foods. Such control is usually required in mass feeding because it helps to assure each person his share of the most desired foods. Unless the supply of food is unlimited there are always a number of persons who will take more than a reasonable share of certain foods to the detriment and dissatisfaction of those who follow.

The serving time for one group seating in cafeteria style is slow as compared to table service where the population sits down at one time, perhaps at hourly periods. In the cafeteria line, each diner's plate or tray is filled, one dish at a time, at an approximate rate of 8 persons per minute, or 240 persons served in a 30-minute dining period. In mental hospitals and probably in the Veterans' Home, the rate is less and of the order of 5-6 per minute, or 180 persons in a 30-minute dining period. This limitation of cafeteria service in institutional feeding where the diners arrive at one time or in one or more groups at stated times necessary because of the need for some control of the movements of the wards, introduces a number of problems in the general operation and planning of an institution, among which are the following:

a) Size of dining room in relation to the population.

1) If the dining room is large enough to hold all the population, except the kitchen force--the meal time required is approximately one hour for service, dining room attendants, and the wards, if there are enough counters.

2) If the dining room is insufficient to hold all the population, food must be served;

a) continuously for one or two hours. In this case the diners either dispose of their own trays and dining room helpers clear after them or the diners leave their dishes or trays at the table and they are removed by dining room workers.

b) regular intervals; usually at hourly periods. The problems of disposal of dishes after eating are the same as above. Other problems arise in relation to other activities of the institution, such as:

(1) Where the wards are not occupied in some specific activity the major problem is the control of the wards in groups and organization of the living quarters and attendants or guards.

(2) Where the wards are engaged in certain tasks by groups and can be moved in groups, the problem is again organization of the living quarters and attendants or guards. If, however, for reasons of care and rehabilitation the wards cannot be housed and moved together, a further complication arises in the gathering and sorting of the wards for housing, meals and activities. In hospitals this may result in the restriction of the time that the physician and other persons engaged in rehabilitation can work effectively, to a short period of time in the morning and afternoon; otherwise it interferes with the other activities in which the wards are engaged. Interference was particularly evident where patients were engaged on culinary operations.

b) The number of employees required to operate the culinary department.

1) If the dining room is large enough to hold all the population (see 1) above);

The number of employees or wards required to serve the food is determined by the rate of serving; i.e. 180-240 per counter, and the necessary dining room workers to clear the area.

2) If the dining room is insufficient to hold all the population (see 2) above);

Fewer employees or wards are required to serve the food. The number is related to the size of the dining room. The number of the kitchen force is increased because the food should be cooked in batches at intervals for acceptable meals.

B) Family Style Service.

In family style service the tables are set, food is placed in serving dishes on the table and the host or hostess serves the food. The dishes are removed and the tables and dining room are righted after the diners depart.

Family style service or modification of it is used in the Department of Education.

C) Russian Style Service.

In the Russian style service the table is set and the food placed on the table, just before the diners arrive, in serving dishes, usually in portion sizes of those foods that are capable of subdivision, or in bulk for a given number of persons. The diners help themselves. Second portions or additional food are brought to the tables by waiters or waitresses. The tables are cleared after the diners have left. In some cases the diners may be required to carry their dishes to a central place.

A variant on Russian service is that the food is served in dishes or trays or on compartment trays at a central point in the dining room or kitchen and brought to the diners after they are seated or placed on the table just before they enter.

With reasonable restraint on the part of the diners in helping themselves, in relation to the more interesting foods and the other wards, the Russian style service is the most successful and rapid. It does not require any more culinary personnel or dining room space than cafeteria service---except where cafeteria service can be continuous and extend over a number of hours.

Comment:

The disadvantages of the Russian style service appear where the privilege of taking food by the diners is abused, such as where the first persons at the table take all the interesting food and the subsequent diners must wait for the serving dishes to be replaced or refilled, or go without that food.

Tray service in the Russian style service removes many of the difficulties found when food is placed on the tables. It has the disadvantage of possible waste if the servings are large and the diner does not want all of the food. Waste can be reduced by giving smaller servings and providing second or third helpings.

The Russian style service is most successful under the best conditions in encouraging the consumption of foods that should be consumed for health, but which are too often neglected, such as the leafy and green vegetables. This is accomplished by placing such foods as soups and salads and vegetables on the table in central dishes just before the diners arrive. After a suitable time the meats and later, in some cases, the desserts are placed on the table. Under such a routine the diners tend to take some of most of the foods on the table and consume them or begin to consume them before the meat arrives. It is important, however, that the diners have confidence that the rest of the meal will arrive promptly at the proper time. This method helps to distribute meats fairly because the wards are seated together and group pressure is present to retard the glutton.

The type of service and the number of seatings required for each meal in an institution influences the size and arrangement of the culinary department, the personnel, employed or wards, required to operate it and the activities of the institution as a whole.

The major problems in determining the type of service to use are:

a) extent to which food service must be controlled,

b) time available for eating; must everyone be fed at the same time, within a restricted period of time, or without a time limit,

c) number of persons to be fed,

d) capacity of the dining room,

e) (in relation to cost of operation) the number of persons that must be employed to supervise the service of food, serve food and to clean up after the meal,

f) facilities for protection of food and maintaining it in the desired state for service,

g) (in relation to preparation of food at a central kitchen and service at a separate dining room) the means and equipment available for transportation of food.

Comment: Transportation of food to dining rooms. The method of transportation of food to the dining room is not primarily a question of type of service but the method of accomplishment. It is, however, so closely tied to the type of service that it requires consideration with it. It has been discussed in relation to "Use of Food Conveyors" but is presented here because it is so closely related to successful food service.

Two procedures are common in transportation of food.

a) Each prepared dish or food is carried in one or more stock pots, bake pans, boxes or trays and delivered to a serving room or counter.

b) Food is placed in food trucks or conveyors and pushed or carried in motor trucks to the dining room.

Both types of transportation are equally successful under good control and organization. The use of food trucks and conveyors has the advantage that all the food for service can be assembled in one or more conveyors at the central kitchen and be moved with less handling to the place of service. This means that the movement of food is more orderly and with less confusion, opportunity for theft, opportunity for contamination of some foods, or damage by the weather.

There is need further for study of both types of transportation.

The problem of the use of individual containers relates to the ability to carry them in the motor trucks, especially the protection of baked foods, both from the weather and so that they will be attractive when served. The problems are solved in various ways in different institutions.

The question of the adoption of food trucks and conveyors relates to construction of buildings and service counters as well as the development of trucks or conveyors that will give satisfactory service. At present the conveyors used are those developed for ward service in hospitals. They are suitable for individual service of about 30 people and are used rather successfully at present in so far as movement of food at one time is concerned. The present food conveyors are not, however, entirely satisfactory for service of food to 60-100 or more people. There is need for a thorough study of the problem of transportation of food in food conveyors and the development of suitable equipment adapted to the needs of institution food service. See discussion of food conveyors.

NUTRITION POLICIES, PRACTICES, AND OPERATING PROCEDURES OF THE STATE OF CALIFORNIA IN FEEDING AT RESIDENTIAL FACILITIES UNDER JURISDICTION OF:

Department of Corrections
Youth Authority
Department of Education
Department of Mental Hygiene
Department of Veterans Affairs

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Part III

FOOD ALLOWANCES OF VARIOUS STATE AGENCIES

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* * * * * *

By

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to the

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DEPARTMENT OF CORRECTIONS

Comments on the food allowances of the Department of Corrections and their nutritional adequacy. Data on the food allowances of the Department of Corrections are contained in the attached table, Table I. An estimate of the caloric requirement of inmates of the institutions of the Department of Corrections in relation to the Nutritional Allowances of the National Research Council, presented in Table II, has been calculated on two bases: (a) The percentage of men and women who work, as "active" or 4,000 calories for men and 2,800 calories for women. This classification is not proposed by the National Research Council but is believed to cover adequately the average of all men and women who work. The remainder of the population was considered to be sedentary. (b) The second set of data are based on the following assumptions: (1) the percentage of boys and girls under 20 years of age were considered to require the N.R.C. allowances for boys and girls of that age; (2) one-half the men or women were considered to be "active" and the remainder "physically active" for men, and "moderately active" for women; (3) the rest of the population was considered to be sedentary.

The two sets of assumptions gave very much the same results. This is because of a fairly large proportion of young men and women 20 years or under. An additional 15% was added in all cases to cover waste, misuse, and the capabilities of average cooks. A weighted average for an equal proportion of men and women was also calculated.

It is apparent that the food allowances of the Department of Corrections are reasonably liberal and nutritionally adequate. The protein content of the men's allowance in all institutions is higher than is required to cover the nutrient requirements or for satisfaction under good control. There is good reason to expect reductions in various foods as the efficiency of the culinary departments is developed.

The tendency of some culinary departments to consider that they must feed all of the food allowances is unfortunate, as it is in other agencies. It is desirable to prepare enough of the interesting foods according to a reasonable portion size and assure sufficient other food to satisfy the appetites of individuals, provided they do not waste food. The nutrition accounts of successful operations with better control of food are then studied and if the overall nutritive content of the food fed is sufficient for health and is maintainable for a period of time the allowances should be changed. It is desirable to have records of the height and weight of wards under standard conditions and regular intervals as a check on sufficient calorie and nutrient intake. The physician should also check the health of the population for assurance that the diet is sufficient. There is no reason to justify an increase in relative cost. A reduction in one group may require an addition to another for reasonably acceptable meals. Abrupt changes are seldom justified in any mass feeding operation, but constant attention to making better use of what is available, with savings when possible, is a public responsibility in all agencies. There will be considerable difficulties in adjustments without the help of a department food administrator.

Special attention should be given to Lancaster and the Forestry Camps. The first reduction at Lancaster could well be the milk to the level of 2 pounds of fluid

milk equivalent per person per day. The Forestry Camps are a special problem. The men are outdoors and the allowances cover the food for the Forestry and Correctional officers and employees as well as the inmates. The cost of the food supplied the inmates is deducted from the small allowance paid them for work. The allowances are characteristic of the diets supplied to workers in the woods. There is every reason to believe that modifications of the food allowances can be accomplished with closer supervision of the inmate work, provision of a supervising cook, and proper instruction of possible inmate cooks before they go to the camps and while they are there. This will require continuous review of camp operations by a "floating" supervising cook or provision of an employed cook and his relief for duty in each camp.

General Comment: The operations observed in institutions and camps of the Department of Corrections were generally good, with the qualification that there were obvious possibilities for improvement. They were orderly and well conducted. There was better control over food use and distribution than is attained in many penal institutions. This condition is an indication of the progress which has been made in food preparation and services under the food control as well as the care and handling of the inmate population. The meals were well prepared, of sufficient variety and an occasional special food or dish is supplied through work by the inmate population and improved equipment available. It is such practices which create a feeling in the inmate population that they are not entirely neglected even though the special food may contain the same ingredients as would normally be eaten.

There were no particular deviations from the operation of the Food Control System and no obvious diversion of food to the employees dining room. In fact there was an attempt to be certain that there was not a diversion of food. As indicated above the officers and employees in camps eat the same food as the inmates.

The Division of Highways, Department of Public Works uses inmates for work on State highway construction. The men are paid a wage for their labor, from which the cost of their maintenance is deducted, including the cost of food. This is intended to make the prisoners self supporting and to create an incentive to work and encourage economy in camp maintenance. These camps are not operated under the General Fund. They have a well developed food control program which includes nutrition accounting combined with financial accounting and the cost of culinary operations is tied to the food control. The Division of Highways has described its feeding and nutritional accounting in "Prison Road Camps" a reprint of a series of articles from "California Highways and Public Works" 1950

TABLE I

RATIONS-DEPARTMENT OF CORRECTIONS
(Pounds per Person per Day
of Standard State)

	San Quentin Folsom Soledad Terminal Island	Lancaster (Youths)	Tehachapi (Women)	Forestry Camps
Meats	.600	.700	.400	.856
Eggs	.089	.125	.089	.198
Milk	1.229	2.390	1.750	1.740
Fats				
Butter, etc.	.046	.045	.045	.060
Other	.123	.086	.099	.100
Sugars	.204	.200	.203	.273
Grain Products	.750	.815	.415	.903
Legumes, dried	.152	.138	.060	.111
Vegetables				
Leafy Green) Yellow)	.500	.500	.385	.446
Tomatoes	.176	.175	.170	.185
Potatoes	.700	.700	.600	.700
Other	.400	.424	.486	.307
Fruits				
Citrus	.173	.330	.241	.173
Other	.250	.250	.330	.263
Dried	.057	.056	.045	.056
Calories	4174	4613	3289	4496
Protein, gm.	131	160	100	148
Fat, gm.	166	180	140	197
Carbohyrate, gm.	541	590	414	530
Calcium	1.21	1.85	1.32	1.44
Phosphorus, gm.	2.08	2.65	1.80	2.38
Iron, mgm.	26.9	29.2	19.0	30.2
Vitamins				
A, I.U.	11,250	12,260	9,900	10,940
Thiamine, mgm.	2.85	3.23	1.94	3.21
Riboflavin, mgm	2.88	3.94	2.60	3.92
Niacin, mgm.	31.4	34.5	20.8	34.1
Ascorbic acid, mgm	174	208	176	135

APPROXIMATE ENERGY REQUIREMENTS - DEPARTMENT OF CORRECTIONS: IN RELATION TO THE NATIONAL RESEARCH COUNCIL ALLOWANCES

Men

a) Liberal

All men at work; 25.8%, Active		4000 calories
(Active is assumed from 4500 calories Very Active of NRC)		
Remainder 74.2% Sedentary		2400 "
Average	2812 calories	
Plus 15%	3121 "	

b) Moderate

Boys under 20; 6.2%		3800 "
1/2 Men at work; 12.9%, Active		4000 "
1/2 " " " ; 12.9%, Physically Active		3000 "
Remainder; 68.0%, Sedentary		2400 "
Average, weighted	2771 calories	
Plus 15%	3187 "	

Women

a) Liberal

All women at work; 28.2%, Active		2800 "
(Active is assumed from 3000 calories, Moderately Active of NRC)		
Remainder; 71.8%, Sedentary		2000 "
Average, weighted	2226 calories	
Plus 15%	2471 "	

b) Moderate

Girls under 20, 4.5%		2400 "
1/2 women at work; 14.1%, Active		2800 "
1/2 " " " ; 14.1%, Moderately Active		2400 "
Remainder; 67.3%, Sedentary		2000 "
Average, weighted	2187 calories	
Plus 15%	2515 "	

Equal Number of Men and Women, (plus 15%)

Liberal	2796 calories
Moderate	2801 "

YOUTH AUTHORITY

Comments on food allowances in the Youth Authority and their nutritional adequacy. Data on the food allowances, their nutritive content and the nutritional allowances recommended by the National Research Council for growing boys and girls were supplied in detail by the Department Food Administrator of the Youth Authority.

The food patterns will enable the production of satisfactory meals. This was supported by observation of meals served in Youth Authority facilities. The calculations indicated that the allowances were nutritionally adequate. These allowances carry a 15% additional quantity of food in relation to caloric content, for waste and mismanagement, as do the food allowances of the other agencies.

The allowance of milk is high in all rations to provide the additional calcium recommended for growing boys and girls. The total protein and calcium content of the food controls is higher than is required. This is the result particularly of the contribution of calcium in the leafy green vegetables, grain products and milk and of protein by the grain products, milk, eggs and meat. There is justification for reductions in one or more of these foods. An allowance of 0.5 pound of carcass meat per person per day is conservative for satisfactory meals with the quantity of milk required; the allowance of eggs supplys approximately one egg a day. It would be well to reduce the milk allowance to 2.0 pounds of fluid milk equivalent per capita per day - or the equivalent of a quart of milk a day. (A more detailed discussion of the possibilities of reducing the allowance of milk is attached.)

The use of "other fats" or cooking fats, is higher at the Preston School of Industry than is normally required for satisfactory food preparation. The allowance of meat as well as milk is also high at this institution. The meat and "other fats", as well as milk, should be reduced to the level of the other institutions. These changes would still provide sufficient food for nutritionally adequate diets and the preparation of satisfactory meals.

I am satisfied that the Food Administrator will be able to continue to develop the culinary departments of the various facilities, to improve the acceptability, and control over the distribution of food and in some cases effect savings in the relative cost of feeding.

General Comment: The facilities of the Youth Authority visited were preparing acceptable meals. There is, however, room for an improvement. The problems of operation which the Youth Authority encounters are similar to these of most institutions, further complicated by the fact that the wards are active, immature, growing boys and girls under 21 years of age. Most of the schools and camps are relatively small. Only one institution has a food administrator, which is the Ventura School for Girls. This means that most of the schools must depend upon the Department Food Administrator for advice and assistance, and that she must personally give attention to details that other Department food administrators and managers can leave to institution food administrators. The Youth Authority Food Administrator takes care of, on contract, the facilities of the Department of Education and Veterans' Affairs. The relatively small units with which she works require as much or more attention than does a large institution. The work load of a Food Administrator must be measured by the number of institutions rather than the size of an institution.

The distribution of the time of the Youth Authority Food Administrator and her inability to give sufficient time in a year to any one facility, is in part compensated for by the development of a Food Control Manual for use in the forestry camps of the Authority. This manual is sufficiently detailed with regard to the operation ofthe Food Control and the food allowances and their use to be of considerable assistance to the officers in charge and to help the cooks in planning and preparing meals.

The immaturity of the wards of the Youth Authority presents both problems and opportunities. There is the opportunity, and the need, to develop their skills and knowledge. The boys and girls perform the work of the culinary department under direction of the employed cooks or housemothers or housekeepers who must, of course, keep in close touch with all details. They are in effect cooks, supervisors, instructors and group leaders. The relatively small size of these facilities or units means that each cook or housemotherhas a greater influence on the success of the program than any one person in a large institution where more supervisory cooks or food administrators are present. Provision and development of well trained cooks will further the objectives of the Youth Authority and at the same time conserve food. This means careful selection, adequate pay and in-service training.

Some of the boys and girls are from very modest homes. The food control assures regular, nutritionally adequate diets to many of them for the first time in their lives. The meals are produced with facilities and personnel that are superior to those many of them will encounter when they are returned to society. It is important that the instruction and experience of the wards contribute to their rehabilitation and adjustment to their future environment. In the case of food and feeding, this means the maximum use of simple, low cost foods with instruction in the planning, selection, preparation and serving of wholesome nutritious meals and in the principles involved .

The Reception Centers near Sacramento and Norwalk will receive boys and girls who are undernourished. They offer opportunities for nutritional rehabilitation before the boys or girls are assigned to camps or institutions. The additional allowance of meat for the clinics is justified for the boys and girls who are known to require it. The additional quantity might be used as second servings to individuals as prescribed by thephysician in charge. Additional food or nutrients for therapeutic use could also be prescribed, requisitioned and accounted for in the same way as drugs and medicines. This would permit the Center or Clinic to operate under the food control used throughout the agency and still provide for the special needs of individuals who are undernourished.

There is every reason to continue the development of the culinary departments of the Youth Authority facilities. This should be primarily through in-service training and supervision. The fact that the food administrator is used by other agencies, that may not themselves justify a department food administrator, indicates the desirability of supplying an assistant food administrator and a "floating" supervising cook position for work with these agencies under the Food Administrator of the Youth Authority. The results so far attained justify the assurance that these additional personnel will not only produce more satisfactory meals but, with administrative support, more than save their salaries in reduction in the quantities of food used.

CALIFORNIA YOUTH AUTHORITY

Food Allowances Expressed in Pounds Per Inmate Per Day in standard state
Based On Food Control Quarterly Ration - Dated 7/14/50

CLASS	KIND OF FOOD	CLINICS	PRESTON	PASO R.	NELLES	FRICOT	FORESTRY C.	VENTURA	LOS GUILUCOS
I	Meat - fish & poultry carcass weight	.75	.75	.50	.50	.50	.75	.50	.50
II	Eggs, fresh equivalent	.17	.12	.12	.12	.12	.17	.12	.12
III	Milk and milk products fresh fluid equivalent	2.41	2.31	2.34	2.29	2.34	2.42	2.17	2.32
IV	Margarine or butter	.06	.045	.045	.045	.045	.045	.045	.045
V	Other fats - weighted average shortening equivalent	.076	.193	.08	.08	.073	.13	.083	.07
VI	Sugars and syrups Sugar equivalent	.2921	.2856	.2070	.2325	.20	.2921	.20	.204
VII	Grain Products Flour equivalent	.69	.83	.70	.69	.70	.91	.506	.5147
VIII	Legumes	.11	.125	.114	.114	.114	.127	.06	.05
IX	Vegetables - yellow, green and leafy (weighted)	.40	.40	.40	.40	.40	.40	.40	.40
X	Tomatoes - fresh equivalent	.17	.17	.17	.17	.17	.17	.164	.164
XI	Citrus - fresh equivalent	.33	.33	.33	.33	.33	.33	.33	.33
XII	Potatoes - Irish and sweet	.66	.70	.50	.50	.50	.67	.46	.40
XIII	Other vegetables - weighted	.40	.40	.40	.40	.40	.40	.40	.40
XIV	Fruits other than citrus	.37	.33	.33	.33	.33	.33	.33	.33
XV	Dried fruit	.06	.08	.06	.06	.06	.056	.04	.05
XVI	Coffee	.03	.03	.0043			.06	.03	.0043
	Tea							.0006	
	Cocoa	.01	.0055	.01	.01	.01	.0055	.0077	.0055

Prepared by: Jane Pirkey, Food Administrator 12/13/50

CLASS KIND OF FOOD	CLINICS	PRESTON	PASO R.	NELLES	FRICOT	FORESTRY C.	VENTURA	LOS GUILUCOS
Calories	4563	4839	4090	4015	4077	5239	3629	3570
Protein, gm.	154	157	136	131	136	172	122	123
Fat, gm.	179	188	158	154	154	210	152	151
Carbohydrate, gm.	578	625	528	525	527	659	427	432
Calcium, gm	1.74	1.68	1.76	1.62	1.76	2.05	1.52	1.63
Phosphorus, gm.	2.70	2.59	2.40	2.32	2.38	2.88	2.04	2.10
Iron, mgm.	28.7	31.3	25.8	25.8	25.5	31.2	17.0	20.3
Vitamins								
A. I. U.	9,110	8,750	8,650	8,630	8,670	8,970	8,370	8,590
Thiamine, mgm	1.87	2.10	1.69	1.71	1.68	2.16	1.39	1.36
Riboflavin, mgm	3.38	3.37	3.06	2.86	2.85	3.67	2.55	2.60
Niacin, mgm.	2.71	28.2	21.2	20.7	20.5	30.5	19.1	17.8
Ascorbic acid, mgm	127	129	120.	119.	119.	127.	116.	114.

Milk Ration. The allowance of food in the rations of the Youth Authority is adjusted to the higher nutritive requirements of growing and adolescent boys and girls. In addition there is an approximate 15% allowance for wastage, management and the small size of most of the camps and schools.

The food allowances are all high in protein as the result of the generous quantities of milk and milk products used to provide the high calcium intake necessary for growing boys and girls. Milk and milk products are maintained at approximately 2.25 pounds of fluid milk equivalent. This level of milk combined with the 0.5 pound of carcass equivalent of meat results in a considerable higher protein intake, which is one of the most costly items of a diet, than is justified in a moderate cost diet. Therefore an adjustment should be made between the relative amounts of meat, milk and eggs used. The logical reduction to be made, from the point of satisfaction and acceptability of the diet, is in the milk or milk products. The levels of meat and egg allowances are at about the level of a reasonably satisfactory diet.

The quantity of fluid milk provided at present is related to a menu pattern in which milk appears as a beverage three meals a day in 8-10 fluid ounce portions. This portion size is greater than the customary 6-8 ounce portion and is apparently related to the size of cups provided. Other milk products used are not excessive for the preparation of acceptable meals, which include one service of ice cream a week. The ice cream is made chiefly from fresh milk in institutions with facilities for making it. The reduction in the milk allowance should, therefore, be made in the use of fluid milk as a drink.

Objections to a reduction in the use of milk as a beverage which are sometimes stated are apparently an administrative reaction based on the popular concept of the importance of milk to drink rather than on a study of the ration in use. The latter indicates a high overall use of milk in the diet, general satisfaction with the menus through use of milk and milk products in the preparation of acceptable dishes, and evidence that the total quantity of milk and milk products used places the total nutrients including calcium well beyond the nutritional needs of the boy and girl wards. Use in such large amounts is hardly justified in a public agency except by formal agreement. A change in the present menu pattern could well be made; it should be made with the acceptance by the management and the public that the use of larger quantities of milk as a beverage is unnecessary either for an acceptable or a nutritionally adequate diet. With such understanding the allowance of milk and milk products could well be reduced to the technical equivalent of a quart of milk a day, which is two pounds of fluid milk equivalent.

An allowance of two pounds of fluid milk equivalent would assure in the total diet more than the 1.4 grams of calcium proposed by the National Research Council for growing boys. It would provide for one 10 fluid ounce portion of milk to drink and 6 fluid ounces for cereal as well as milk for cooking. The size of each fluid milk service could well be reduced to 6-8 punces in conformance with usual practices and reduce the total slightly more without interference with the food pattern.

Two pounds of fluid milk equivalent would provide milk for the various uses and in the amounts indicated expressed in fractions of a pound or their equivalent in ounces of fluid milk for a person each day as follows:

a) Where canned evaporated milk is not used in coffee:

Beverage	1.4075	pound	(22.5 ounces)
Ice Cream	.155	pound	(2.5 ounces)
Baking	.0625	pound	(1.0 ounces)
Cooking	.125	pound	(2.0 ounces)
Cereal	.25	pound	(4.0 ounces)

The 22.5 ounces (1.4075 pound) will allow two 10 ounce servings of milk or one hot chocolate for breakfast and one 10 ounce serving of milk on the menu.

b) Where 2 ounces of evaporated milk (or 4 ounces of fluid milk equivalent) is used for coffee, the quantity available for beverage is 18.5 ounces fluid milk. This is enough for two 9 ounce portions if it is properly portioned out and the second helpings are controlled.

Note: The per capita use of a food does not necessarily mean that it is used in that amount each day but that, when used in larger quantities at occasional periods such as in ice cream, the total quantity distributed over a month or quarter would give the daily average indicated.

DEPARTMENT OF EDUCATION

Comments on the nutritive content of food allowances used in the Department of Education for facilities at which food is provided with State funds.

The Department of Education is responsible for feeding in the schools for blind and deaf and cerebral palsied children, the Maritime Academy and the Training Center for the Blind. With the exception of the Maritime Academy it is concerned with handicapped persons. Some of them require special attention in the service of food. The nutrient requirements are generally those of normal children, adolescents and adults with the possible exception of the cerebral palsied children. It uses the services of the Food Administrator of the Youth Authority, on contract, for supervision of its operations.

Food allowances have been developed on the basis of nutrient requirements and experience. The food patterns are contained in Table I.

The problems of feeding cerebral palsied children are complicated by the difficulty some children have in eating food and losses of food in the process of eating. In such cases every mouthful they can swallow is important. The food allowances are sufficient and the operations observed were well conducted, with an air of accomplishment.

The Maritime Academy was not visited. It is composed of boys with high requirements. The allowances of meat, milk and eggs are higher than is required for satisfactory reasonable diets even for growing boys. There should be an adjustment between these foods and, with experience, the allowances can be reduced at least to a level customary on merchant vessels and the Navy. Reductions have been made through the assistance of the food administrator and further reductions are contemplated.

General Comment: The meals at the schools visited were well prepared and the operations carefully conducted. The problems of feeding handicapped children were obvious. One is impressed with the success with which they were handled and met.

The schools for cerebral palsied children have special problems in feeding the children while in their care. The children are returned to their parents following training in the schools. There is need for study and development of diets that will be successful in the hands of the average parent. There is apparently a need for the determination of the nutrient requirements of characteristic types of cerebral palsy, and the variety of foods commonly available that may be used to meet them when prepared in the average family. There are possibilities for such developments at the school in Southern California, when it moves to its new quarters near the University of California in Los Angeles, through liaison with the University and its scientific personnel interested in feeding and nutrition.

DEPARTMENT OF EDUCATION
Food Allowances (in pounds per person per day of food groups in the standard state)

	Blind Children	Deaf Children	Cerebral Palsied Children	Blind Adult Training Center	Maritime Academy
Meats	.500	.500	.500	.750	.969
Eggs	.125	.125	.120	.178	.180
Milk and Products	2.410	2.340	2.390	1.280	2.200
Fats					
Butter, etc.	.050	.080	.045	.060	.066
Other	.044	.080	.060	.144	.158
Sugars	.142	.166	.148	.200	.225
Grain Products	.440	.620	.256	.430	.428
Legumes, dried	.034	.040	.030	.480	.039
Vegetables					
Leafy, Green) Yellow)	.400	.400	.400	.330	.400
Tomatoes	.166	.170	.250	.153	.250
Potatoes	.500	.470	.410	.538	.604
Other	.400	.400	.220	.400	.407
Fruits					
Citrus	.330	.330	.364	.165	.330
Other	.400	.330	.330	.365	.414
Dried	.060	.035	.055	.088	.017
Calories	3548.	3830.	2344.	3548.	4222.
Protein, gm.	124.	135.	80.	125.	146.
Fat, gm.	162.	170.	110.	166.	232.
Carbohydrate, gm.	398.	440.	252.	396.	473.
Calcium, gm.	2.02	2.02	1.27	.99	1.63
Phosphorus, gm.	2.40	2.60	1.60	2.08	2.38
Iron, mgm.	19.9	22.1	9.5	24.5	24.0
Vitamins					
A. I. U.	11,000.	11,800.	11,600.	9,810.	12,610.
Thiamine, mgm.	2.23	2.45	.80*	2.35	2.51
Riboflavin, mgm.	3.91	4.08	2.24*	2.62	3.69
Niacin, mgm.	22.2	25.9	11.7*	28.4	32.2
Ascorbic acid, mgm.	157.	153.	99. *	120.	203.

* Corrected for losses in preparation

GENERAL COMMENT ON THE PROBLEMS OF FEEDING IN THE DEPARTMENT OF MENTAL HYGIENE

The recent request for additional food for the Department of Mental Hygiene was based on two major needs: (a) improvement in the nutritional composition of the ration, and (b) more food for use as therapy. Food is used as therapy both to increase the nutritive content in a specific manner to cover the nutritional needs of the patient and for the psychological effect of the food on morale. The success of its use in the latter case depends on such variables as the patient's food habits, customs, and reactions to environment. The justification of its use and possibility of attaining success in a public institution is tied closely to cost of the operations, public support of the policy, whether it can be used efficiently and effectively within institutional operations, and the limitations of the ability of a large institution to function outside of its routine pattern. Unfortunately we so confuse food as a source of nutriment and as a source of satisfaction that it is difficult to separate one from the other in determining policy or treatment. The difficulty lies in part in the folk-lore and unscientific interpretation of past experience.

The advances of the science of nutrition, chemistry and physiology in recent years have only recently made it possible to appraise the nutritional phases of institutional feeding operations and to differentiate between the apparent effects of food itself and that of the diet as a whole, especially in terms of specific nutrients, its nutritional content in general and one or more of its nutrients. Knowledge of nutrition has progressed to the point where the National Research Council has established nutritional allowances in terms of specific nutrients, based on age-sex-activity requirements, sufficient to provide a high level of adequacy. From calculations of the ration provided under the food allowances provided by the Food Control of the Department of Mental Hygiene, based on the tables of food composition and possibility of losses in food preparation and processing, it is possible to determine to a close approximation the specific nutrient content of the diet of an institution.

Furthermore technicological changes have made pure nutrients or concentrates of them available for use in the treatment of cases of general or specific forms of malnutrition. The physician is thus in a position to prescribe additional amounts of specific nutrients or groups of nutrients to the institutional diet already available, since it is based on recognized standards of nutritional adequacy, and the amount and kind of the nutrients it furnishes can be calculated with a fair degree of accuracy. Such a procedure seems especially appropriate for physicians working in public institutions since modifications of the standard diets may require arbitrary additions of relatively expensive foods, which without the assurance of improvement or cure of the patient, would mean an added and hardly justified cost to the public.

I believe that to initiate studies of the particular nutritional needs of the patients of institutions of California is a sound policy. Such studies would form the basis for further planning and development. They are justified on the necessity for very large and continuing capital investments in buildings, equipment, and personnel for the operation of the institutions supported by the State in addition to the large and continuing expenditures for food.

If the use of concentrates of nutrients is too expensive or not otherwise feasible there is the alternative of modifying the diet through use of other and less expensive foods. This will necessitate a critical review of what the proposed therapeutic diet was intended to provide and what other food sources would serve as alternatives. Here the physician can call upon the institution's dietitian or the food administrator, a person with professional training in nutrition and specific knowledge of the problems involved in supplying acceptable food to patients and of the food available for use within the food control. The physician by turning his prescription for diet therapy over to the dietitian for filling makes the treatment possible within the normal limitations of institutional operation.

The use of food as therapy, aside from its nutritional phase, has, as indicated, limitations which are related to the individual himself, his care in a public institution and the fact that food preparation and service in an institution is a mass operation. To understand them one must consider what constitutes acceptance and satisfaction with food and what can be done to change attitudes under the conditions of institutional life. The physician recognizes this, but under the pressure of prescribing for a large number of patients with only a few trained experienced assistants he justifies the prescription of more food as a simple and probably an efficient way out. An effective method of handling of patients in a dining room, which I observed for a sufficient length of time to be relieved of first impressions, demonstrated the value of in-service-training of attendants and the results that could be obtained within an even simpler ration than that contemplated for the patients concerned. The pilot study at Stockton should also be fruitful and useful in differentiating the value of food in itself from that of service and of special attention, because I have seen meals equally acceptable and varied to the one I saw in the pilot study, served in the ordinary process of food production and service in other hospitals. These patients had as good or better surroundings than at Stockton, but they did not have the amount of attention and encouragement in eating as is given in the pilot study. While the pilot study was not designed to differentiate the feeding from other phases of treatment it should contribute considerable information for use in the problems of feeding in institutions in general.

The food allowances of the food controls of the Department of Mental Hygiene are nutritionally adequate for the normal individual, according to the nutritional allowances of the National Research Council. The allowances of the N.R.C. are liberal. They are planned to provide abundant nutrition and are designed to permit additional benefits as well as to cover individual variations. The food allowances of the food controls here supply sufficient excesses of nutrients beyond the N.R.C. allowances to cover most of the losses likely to occur in cooking and service of food in institutions. It is recognized that procedures in institutions are such that the maximum destruction of vitamins and losses of minerals probably occur. (There is opportunity and an obligation to prevent much of this loss through modifications in procedures for cooking and handling foods.)

There is no question but that in the treatment of mentally disturbed patients the vitamin requirements in general and especially those of the Vitamin B complex should not fall below the level of the National Research Council. There is little evidence that the use of additional quantities of vitamins and minerals even when provided in a diet of natural foods which assures the presence of unrecognized or established nutrients, is in any way beneficial to the average

individual. The need for additional quantities of nutrients for mental cases needs support. There are individual cases where additional minerals or vitamin therapy may be indicated. In prescribing for such cases the amount needed should be considered in the light of experimental evidence and the total nutrient content of the diet the patient receives. If additional quantities of nutrients are required, it would seem better to prescribe a particular nutrient or quantities of a food. This seems desirable at least until the need for and quantity of the nutrient is established.

With the present knowledge of nutrition and pure nutrients available, the State could well support suitably controlled studies of the nutritional needs of some of the major types of mental disturbances in which a high intake of nutrients is believed to be of benefit. The ultimate cost to the State would be far less than to supply additional food for all the patients in these institutions, e.g. the cost of orange juice as compared to ascorbic acid.

Studies of the kind suggested might originate in the course of treatment of a few isolated cases. The results of such cases would not, however, justify a change in the quality and nutritive value of the diets in use in the institutions until they had been tested on a sufficient number of typical cases and for sufficient length of time to show that they are generally applicable and that better results are obtained through the change in the diet than through a special therapeutic diet or the use of purified nutrients or concentrates, by which the dosage is established and the intake can be controlled.

The major variable in studies of this kind should be the particular purified nutrient, combination of nutrients, or concentrates of them, rather than a major change in the type, preparation or service of the diet used. (A change in food itself or special attention without a necessary modification of the nutrient content may have a temporary psychological effect upon people. This might, and sometimes has, in some experiments, been wrongfully interpreted as proof of the effect of a specific nutrient.) The test must be so planned, the number of persons studied large enough, and the period of observation long enough to permit a statistical analysis of the results. The possibilities for conducting such studies are greater in large institutions than outside because of the possibility of having a sufficient number of similar types of mental diseases to supply a fair sample with suitable controls. The cottage plan of housing and feeding patients affords opportunities for the segregation and feeding of such groups not possible where all patients are fed together.

The tests contemplated are not "experiments" in the sense of reducing the nutrient content or character of the diet of one group, as against another, or of any group below the established levels of a nutritionally adequate diet, nor are a few given special service or treatment not available to the population as a whole. They are tests within the normal operation of a hospital and involve the addition of a specific nutrient or nutrients to a group or groups of people or a series of people, with suitable observations of their reactions and recovery. The nutrients should be administered in such a way that they become a routine in the operation of the institution and that ingestion is certain.

Studies of the therapeutic value of variations in methods of preparation and in the service of food within the food allowances of the institutions in the Department of Mental Hygiene could well be undertaken at the Langley Porter Clinic. The Clinic is sufficiently small and has a food service staff of sufficient competence to prepare and serve attractive food within the limitations of institutional operations. Such studies would be a contribution to the problems of institutional operations. They would bring the problems, possibilities and difficulties of operating public institutions to the attention of both the students and the visiting physicians from State institutions. The studies at Langley Porter Institute should be combined with experimental work at one of the food service departments of a large hospital.

Both the adequacy of the diet of patients and its acceptability may be affected by the failure of the food control to function as planned. Such failures may be the result of ineffective operation in the food service department or other parts of the institution for various reasons. On the whole the kitchens produce wholesome meals on time; in some institutions this is a prodigous task which involves long hours, efficient organization and planning, and careful attention to detail with little recognition of the importance of meals to the patients and the dependence of other operations on their regularity.

The requests for additional funds for the Department of Mental Hygiene before the Legislature were for some additional food for patients, especially meat, eggs and fruit or fruit juices. The hospitals of the Department of Mental Hygiene operate on a pool of food purchased for four types of patient diets and for the employees and residents. Because of past experience, I sought information on the methods used in assuring the distribution of food according to the plans for the various diets. Concrete evidence was difficult to obtain beyond the basis of planning meals. The liberal menus in the employees' dining rooms were a matter of comment and concern to the food administrators and responsible administrators. In many cases, the menu was not out of proportion to the food allowances for employees; in some they were very liberal at noon when most of the employees ate and meager particularly at supper. The effect of this practice is discussed later.

The use of interesting foods, such as milk, eggs, and fruit juices, in hospitals and especially for between-meal nourishment is another possible use of food beyond that contemplated in the rations of the food control. The quantities of food provided in the allowances for treatment are sufficient to cover the needs of almost any special diets that would be required by the number of treatment patients anticipated. The over-use of eggs and milk for eggnogs and fruit juices in between-meal nourishments in relation to what is provided for an institution is so common a complaint that it can be assumed that the practice is general. There are two phases of nourishments that require attention: a) the purpose for which they are intended and whether those commonly used are adequate for the purpose, i.e. do they supply enough of the right kind of nutrients; and b) the number of persons who should have nourishments; the kinds and quantities to be used; the period over which they are to be given; and how their use is to be controlled. In the latter case there is also a need to review the purpose for which nourishments or special foods are intended; if it is primarily to improve the nutritive condition of the patient, the composition of the nourishment of the diets available as well as the nutritive needs of the patient must be considered and the decision made on that basis.

The solution of the problem of therapeutic feeding and nourishments must be relatively simple, as all effective procedures must be for public institutions, else they will become top heavy with reports and extra personnel. The decision

to make use of nourishments and nutritional therapy lies with the physician. In many cases he determines the nutritional needs and prescribes treatment in the form of particular foods rather than the type of therapeutic diet required. Since his prescription is based on his diagnosis he might better specify the quantities of specific nutrients desired. If they cannot be obtained from the food provided in the food allowances there is the option of the use of additional food or of purified nutrients or concentrates of them. The desirable procedure where food rather than specific nutrients are to be used for nutritional therapy as previously indicated is for the physician to inform the Food Administrator of the nutrients desired, and the length of time they are to be supplied. To obviate the mis-use of diets, he should restrict his prescription to a specific time, not longer than a week or month depending on the diet. At the end of that time he should review the need and if necessary re-prescribe. The restriction of diets to one week is a regulation of the Department of Mental Hygiene. There are possibilities of supplying the nutrients required for rehabilitation through special preparations which would be more effective than the routine use of eggnogs or fruit juices without fortification.

The need for a review of the use of nourishments and special foods is the consequence of lack of control over their use and not the occasional mis-use. Variations from the regular diets and use of interesting foods between meals are, in most cases, temporary adjustments for nutritional therapy to assure an adequate diet and speed the recovery of the patient. Their mis-use in the light of the public policy and effective operation of public institutions lies in the continuation of the diets beyond their justifiable need, and the necessity to administer them in open wards of a hospital. The latter makes it difficult to restrict diets and special nourishments to the patients that need them, as against supplying them to the ward as a whole. There are enough borderline cases of need for special diets, and use beyond reasonable need when added to those of misappropriation by ward attendants and staff, to result in a questionable use of a considerable quantity of food. The quantities are sufficient in some cases to make it difficult to prepare satisfactory meals for the rest of the population of the institution within the Food Control allowance.

My observation of the operations of the institutional food administrator in relation to the therapeutic phases of the medical problems of institutions is that suitable use is not being made of the professional training of the food administrator as a dietitian in addition to his responsibility for the operation of the food service department under the Food Control. In some cases he is not included in the medical staff meetings, even periodically, where he could represent the food service side of feeding and the food nutrients available through the food service.

COMMENTS ON THE EVALUATION OF THE ADEQUACY OF THE RATIONS OF THE DEPARTMENT OF MENTAL HYGIENE

The basis for my conclusion that the food allowances of the Department of Mental Hygiene furnish a nutritionally adequate diet is as follows:

a) The nutrient content of the various food allowances were estimated through use of weighted average values for the composition of the food groups. The weighted average values used are actually those of the Youth Authority because these data were available and the distribution of foods is approximately the same as in the Department of Mental Hygiene. The results of the calculations are contained in the accompanying tables (Tables I and II) along with the nutritional allowances of the National Research Council for an Adult Man, Physically Active, and a Woman, Very Active. These higher values were used to compensate for possible greater energy and nutrient requirements of the more disturbed patients.

The results obtained agree approximately with those presented in the Department of Finance Analysis of the Department of Mental Hygiene 1951-52 Budget Requests, November 1, 1950, with the exception of vitamin A and ascorbic acid and phosphorus. There is reason to believe that the values for these nutrients in both the current control and proposed control are in error.

The results (Table III) on the Current Control in the Budget Analysis pertain to the General ration which applies to approximately 70% of the population in the Mental Hospitals. There is in addition a Treatment ration, for 13% of the population, and a Workers ration, for 17%, which contain additional food. The Proposed Control in the Budget Analysis covers all of these rations and nursery patients as well, plus fruit juice, cottage cheese and milk for Treatment patients, and deletion, addition or reduction of items for nursery patients. The value for combined rations in my Table I are weighted according to the present food allowances applied to the distribution of patients in the average population of the hospitals (1) without many nursery patients, and (2) with nursery patients. The nutritive value of the combined ration for "No Nursery" is somewhat higher than that of the nutritive value of the "Proposed Control" in the Budget Analysis. This indicates that the total of the food available in the present rations at least approximates the nutritional requirements as visualized by the Department of Mental Hygiene when they requested the increase in the budget to cover them.

b) Calculations of the caloric requirements of the population of hospitals caring for mental or for mentally deficient patients. Two sets of assumptions were used in both cases, one liberal, to cover the assumption that all of the population, rather than a portion, require an abnormally high nutrient intake; the other, conservative, assumes some active patients and a considerable number who are sedentary. The results of these calculations are contained in Tables IV, V, VI.

c) Comparison of the food patterns (in food groups) of the food allowances of the Department of Mental Hygiene with the food usage in New York State hospitals for the same types of patients; and also with some incomplete data for the State Hospital (Mental) of Colorado; and with recommended allowances for people of average income. Table VII.

d) The absence of any expression of opinion at the institutions visited that additional food was needed, or that the diets were nutritionally inadequate or that there was general malnutrition. In discussing the food allowances with administrative and professional personnel they were asked whether additional food was required; they were told that my purpose was to determine the conditions as they existed with no prejudice either for or against a change in food allowances, and that the Director of Finance had desired such an attitude. No examinations were made to determine the presence or absence of malnutrition. My general observations led to conclusions that on the average the people seen appeared to be adequately fed. This conclusion is based in part on my experience in making observations of populations in the course of nutrition surveys in various parts of the world where I was responsible for preparing evidence for recommendations for action in case of serious malnutrition.

e) Most of the food provided in the rations was used; according to the tabulations of the per capita use of food in the 1st and 3rd Quarters, 1950-51. Most institutions did not use all of the allowance of grain products and some evidence was found that not all the meat in the allowances for patients was used by the patients. (Miscl. Tables VIII - X)

If there is sufficient reason to question the nutritional status of the wards at Mental Hospitals under the present food allowances and operation it would be desirable to conduct a survey of an adequate statistical sample of hospital populations that have lived on these allowances for at least a year. Such a study should include one institution with particularly competent culinary personnel and one that is at the lowest level of competence in food services. It should be conducted by persons experienced in conducting nutrition surveys and in recognizing borderline nutritional deficiencies and capable of differentiating the effects of chronic ailments from those that are primarily the result of inadequate diets.

The calculations presented relate to the total nutritive value of the food allowances in general. The question has been raised as to the quantity and quality of the protein supplied and the percentage of animal protein. The nutritional allowances of the National Research Council provide a total of 70 grams of protein for the 70 kilogram man and 60 grams for the 56 kilogram woman. This allowance carries a 50% factor of safety, which has been rounded out to a gram of

protein per kilogram. The allowances do not increase with caloric intake nor in relation to the caloric intake with increased activity; i.e., work. This is because the protein requirement is related more to the quantity of non-fat and bone tissue and does not measurably increase with work. There is considerable evidence that man can obtain adequate diets without any animal protein, although such diets are not in accordance with our food patterns. Animal foods are our most satisfactory source of protein and the distribution of amino acids in them is more characteristic of the needs of man than the individual plant proteins.

The development of the concept of the need for animal protein in human nutrition is tied up with both the protein and the associated vitamins and minerals, particularly members of the vitamin B-complex, and, recently, the so-called "animal protein factor" which includes vitamin B_{12}. In addition there are the minerals--calcium in the case of milk and phosphorus in both meat and milk and iron in meat. In the application of the science of nutrition the contribution of protein and its amino acids has not been completely differentiated in explaining the experience that animal products are a factor in the adequacy of many diets. It is now possible to do this to a greater degree than formerly.

The ration lowest in protein, the nursery ration, contains approximately 69% of animal protein in relation to the 70 gram requirement of the National Research Council, while the Patients' and Workers' rations contain roughly 85% of animal protein on the same basis. The percentages are lower, of course, in relation to the actual protein content of the rations, since this is considerably higher than the NRC allowances. I have, therefore, concluded that the protein content of the ration is both sufficient in amount and in quality.

The calculated vitamin content of the Patients' ration is 270%, 160%, 147%, 175%, and 225% respectively of the vitamin A, thiamine, riboflavin, niacin and ascorbic acid requirements of the National Research Council. This allows for approximately a 50 per cent loss in preparation and service of food.

My evaluation of the adequacy of the rations, in relation to losses in nutritive value in food preparation, takes into consideration that the tables of food composition automatically correct for a considerable proportion of the normal waste in preparation. The values for a particular food "as purchased" take care of the percentage refuse indicated in the tables. There are considerable losses in the vitamin and mineral content of the rations in the course of preparation under all conditions and particularly in institutions. The rations allow for considerable losses of vitamins and minerals but many of them can be reduced through attention to method of preparation, and timing of the work, and organization of the distribution of food and thus increase the nutritive value of the food. Such attention is a necessary part of good culinary operations.

A review of the quantities of the various food groups in the rations in relation to their total nutrient content indicates that a) the quantity of meat provided supplies a considerable proportion of protein, fat, vitamin B_1 and niacin; b) the quantity of milk provided supplies a predominate proportion of calcium and riboflavin. The calcium content of most food controls is higher than the nutrient requirements for all except boys and girls 15-20 years of age. When the quantity of calcium is above requirements milk comes into competition with meat

and eggs as a source of satisfaction and cost. It would appear that if additional meat is desired in some of the rations the quantity of milk might be reduced, and the meat or eggs increased; within the calculated cost of the meat, milk and eggs.

These various means of evaluation have led me to the conclusion that the Patients' ration of the Department of Mental Hygiene if properly prepared and distributed will meet most of the nutritional needs of its patients of all classes, except those that require special medical treatment. The Treatment rations provide additional food from which to draw for the cases with nutritional requirements that do not justify specific nutrients. The Workers' ration provides additional food for rehabilitation and work. The additional protein is not required for work but the meat from which it comes is an added incentive to work. The Nursery ration is higher in milk than is required for the calcium requirements. It is, however, a convenience in feeding such patients.

The second factor in the evaluation of a ration, the possibility that it provides for the preparation of acceptable meals, is based on less tangible evidence than the approximate nutritive value. The food at the various institutions visited was, in all cases, wholesome and edible. The menus were simple but varied for all categories of patients.

Acceptability of food that is properly prepared is a matter of personal opinion and desires. Except for differentiation of good and bad cooking, tasting of food is likely to lead to erroneous conclusions both with regard to exceptional as well as ordinary cooking. Exceptional cooking, especially if it is highly seasoned or sweetened is interesting at the moment but it does not always wear well. Ordinary or plain moderately seasoned cooking of sufficient variety is the background of all meals, with an occasional surprise to vary the general tenor of the meals it wears well day after day.

The time available did not permit me to stay long enough at one institution to determine the "wearing" qualities of the meals. It was possible to spend a week at one hospital to approximate a satisfactory test. In this case I ate only the patients' or general ration and at the time and in the surroundings in which it was served. With one or two exceptions the food was entirely acceptable. The exceptions were the result of poor cooking because it was possible to go to another part of the institution which served similar meals and find the same dish prepared in an acceptable manner.

The provision of bake ovens has made the very desirable preparation of baked foods possible. In some institutions the character of the food prepared in bake pans was lost through transfer to stock pots or the receptacles of food carts. There were obvious possibilities for improvement of the attractiveness of the food through preparation and particularly the method of service of food; and this statement is not intended to detract from the acceptable, and at times superior results in particular dishes for and/or service to patients observed in many kitchens and dining rooms. The provision of additional food might make the operations of the culinary departments simpler.

The conclusion that the present ration is not only nutritionally adequate and that additions or changes should not be accompanied by additional cost of the food at the prevailing rate is based on the following observations in relation to improvement in the acceptability of the rations:

a) The variable results obtained at the various hospitals with the present food allowances indicate that the character of the meals at present is determined to a large extent on the ability and organization of personnel.

b) The possibilities which exist for some adjustments within the present cost of the ration.

c) The relatively short time Institution Food Administrators have operated, the results they are obtaining and can obtain as they have time to demonstrate their ability; to develop the cooperation of the administrative and professional staffs as well as, in isolated cases, the culinary staff; and to take advantage of the improved preparation and serving equipment which has or is about to be provided for the kitchens and dining rooms.

d) The separation or solution of the problems of

(1) the purchase of food for, and the feeding of, employees, residents and provision for special dinners, from that of the wards of the State:

(2) suitable control of the provision of food for therapeutic diets.

e) Where food is produced at the institution, the solution of the problems of production and deliveries of produce of the gardens of a character and quality contemplated in the food control.

Modifications of the ration may be found necessary following experience with the adjustments within the present food allowances and relative cost; experience with better equipment; development of personnel; or evidence from the studies with nutrients rather than gross food adjustments. The latter studies should differentiate between the need for changes in the allowances of food for the whole population, with large proportionate cost, as compared with provision for particular groups that are found to require specific additional nutrients.

TABLE I

Nutrient Content of Various Allowances of Food in the Food Control, Department of Mental Hygiene, 1948
Calculated With Weighted Averages for Composition of Food Groups. (Percentage of Protein from Animal Sources in Relation to N.R.C. Allowances in Parenthesis)

								Vitamins				
	Calories	Protein Grams	Fat Grams	Carbohydrate Grams	Calcium Grams	Phosphorus Grams	Iron Mgm.	A I.U.	Thiamine Mgm.	Riboflavin Mgm.	Niacin Mgm.	Ascorbic Acid Mgm.
General	3,482	114 (84)	126	478	1.29	1.88	23	14,300	2.38	2.81	26.0	169
Treatment	4,158	138 (117)	165	539	1.93	2.44	25	16,100	2.71	3.70	28.0	239
Workers	3,758	122 (86)	139	510	1.48	2.06	24	14,800	2.50	3.12	27.2	175
Nursery	3,213	112 (69)	128	407	1.63	2.00	19	12,600	2.17	3.16	21.8	142
Employees	4,461	145 (131)	218	437	1.51	2.32	28	21,100	2.66	3.53	32.1	218
1950 Proposal	3,729	124 (102)	158	458	1.39	2.04	24	13,700	2.46	3.03	27.4	198
Weighted: Present, No Nursery	3,615	118	134	491	1.41	1.99	24	14,600	2.45	2.99	26.5	179
Weighted: Present, Nursery	3,629	120	135	489	1.46	2.03	24	14,800	2.46	3.06	26.4	176
Averaged Used M.H., 1st Quarter 50-51 (Includes Employees)	3,625	120	143	473	1.47	2.04	23	15,000	2.34	3.11	26.5	175
Average Weighted With Employees	3,700	121	139	496	1.40	2.02	25	14,800	2.49	3.03	27.4	177
Agnew - Patients (low meat)	3,452	111	116	503	1.40	1.97	25	19,300	2.87	3.13	25.2	213
Sonoma - April, 1951	3,226	101 (87)	130	424	1.30	1.76	19	11,500	1.99	2.68	21.8	144
N.R.C. Allowance Adult Man Physically Active	3,000	70	-	-	1.00	-	12	5,000	1.50	1.80	15.0	75
Women Very Active	3,000	60	-	-	1.00	-	12	5,000	1.50	1.50	15.0	70
Private Hospital, Iowa	3,563	114	148	449	1.47	2.00	21	10,600	2.21	3.03	23.9	196

TABLE II

RATIONS - DEPARTMENT OF MENTAL HYGIENE
(Pounds per Person per Day)
(of Standard State)

1948

	General	Treatment	Workers	Nursery	Combined No Nursery	Combined With Nursery
Meats	.500	.542	.535	.385	.518	.503
Eggs	.089	.125	.089	.089	.094	.095
Milk	1.524	2.645	1.856	2.361	1.729	1.837
Fats						
Butter, etc.	.046	.068	.046	.046	.049	.049
Other	.052	.064	.061	.049	.055	.055
Sugars	.182	.203	.203	.113	.188	.180
Grain Products	.614	.624	.624	.567	.617	.627
Legumes, dried	.065	.065	.065	.044	.065	.064
Vegetables						
Leafy Green) Yellow)	.670	.670	.670	.550	.670	.670
Tomatoes	.171	.171	.171	.171	.171	.171
Potatoes	.528	.528	.553	.418	.532	.528
Other	.401	.401	.401	.270	.401	.392
Fruits						
Citrus	.110	.479	.110	.088	.158	.141
Other	.166	.315	.315	.149	.210	.196
Dried	.144	.144	.144	.080	.144	.138
Calories	3482	4158	3758	3213	3615	3629
Protein, gm.	114	138	122	112	118	120
Fat, gm.	126	165	139	128	134	135
Carbohydrate, gm.	478	539	510	407	491	489
Calcium, gm.	1.29	1.93	1.48	1.63	1.41	1.46
Phosphorus, gm.	1.88	2.44	2.06	2.00	1.99	2.03
Iron, mgm.	23.4	25.4	24.3	19.2	23.8	23.7
Vitamins						
A, I.U.	14,330	16,070	14,780	12,608	14,640	14,670
Thiamine, mgm.	2.38	2.71	2.50	2.17	2.45	2.46
Riboflavin, mgm.	2.81	3.70	3.12	3.16	2.99	3.06
Niacin, mgm.	26.0	27.9	27.2	21.8	26.5	26.4
Ascorbid acid, mgm	169	239	175	142	179	176

TABLE III

COMPARISON OF NUTRIENTS - DEPARTMENT OF MENTAL HYGIENE WITH THOSE CAICULATED BY A TABLE OF WEIGHTED AVERAGES AS APPLIED TO FOOD GROUPS

	1950-51 Budget Analysis		NRC	Calculated by Weighted Averages		
Nutrient	Current Control	Proposed Control		Revised 1950	General 1948	Combined No Nursery
Calories	3,348	3,507	3,000	3,729	3,482	3,615
Protein, gms.	110	119	70	124	114	118
Calcium, gms.	1.1	1.1	1.0	1.39	1.29	1.41
Iron, mgms.	20.8	21.4	12.0	23.5	23.4	23.8
Vitamin A, I.U.	3,099	5,866	5,000	13,680	14,330	14,640
Thiamine, mgm.	2.4	2.4	1.2-1.5	2.46	2.38	2.45
Riboflavin, mgm.	2.1	2.6	1.8	3.03	2.81	2.99
Niacin, mgms.	25.6	26.5	12-15	27.4	26.0	26.5
Ascorbic acid, mgms.	93.47	118.51	75	198	169	179
Phosphorus, mgms.	19.5	21.2	-	2,037	1,880	1,990

The weighted averages for the various food groups are based on the distribution of foods in the food groups used in the Youth Authority of the State of California. In applying these values the food controls of the Department of Mental Hygiene were converted to the "Standard State" used in the development of the data. There are some differences in distribution between the two agencies but they are not great. A calculation of the meats used in the Food Controls of the Department of Mental Hygiene gave weighted average values for the group of meats similar to those obtained by the Youth Authority.

TABLE IV

APPROXIMATE ESTIMATE OF THE CALORIC REQUIREMENTS FOR PATIENTS OF MENTAL HOSPITAL

In arriving at an approximate weighted average for an institution for comparison with the nutritional value of the food allowances used or needed, it was necessary to weight the nutritional requirements for the average distribution of the types and sex of patients. As a first approximation it was assumed -- a) that the sexes were evenly distributed, although in most institutions there are more females than males, and they had the average weight, males 154 pounds, females 123 pounds; b) the diets are distributed according to the average of the populations of institutions without a large number of nursery patients, i.e., patients 70%, workers 17%, treatment 13%; c) that if sufficient calories are provided the nutrient requirements other than energy are met by the present distribution of foods. (The present diets provide sufficient additional quantities of other nutrients to cover the average requirements of a physically active man when the food is reasonably well handled in an institution.) Under these assumptions, which are liberal rather than conservative, two average caloric requirements were estimated, one which tends to the liberal, in which the higher values of the National Research Council are used for each class of patients; the other is based on an arbitrary subdivision of each group in which one-half was assumed to be sedentary or the next lowest degree of activity in the case of workers and the other had the same activity as in the first assumption. This is a more conservative set of calculations and might be considered the lower limit for successful operations. The results are as follows:

a) Liberal allowance

1.	"Patient":	Men, Physically Active	3,000 calories
		Women, Moderately Active	2,400 "
		Average	2,700 "
2.	"Workers":	Men, With Heavy Work	4,500 "
		Women, Very Active	3,000 "
		Average	3,750 "
3.	"Treatment":	Caloric content of present food allowance. (There is considerable question as to whether the caloric allowance of the average of treatment patients over a period of time is as high as this.)	4,100 Calories
4.	Average caloric need, weighted by population		3,060 "
5.	Average caloric need plus 15% for wastage		3,520

b) Conservative Allowance

1. "Patients":	Men; 1/2 Physically Active, 1/2 Sedentary	2,700 Calories
	Women; 1/2 Moderately Active, 1/2 Seden.	2,200 "
	Average	2,450 "
2. "Workers":	Men; 1/2 with Heavy Work, 1/2 Physically Active	3,750 "
	Women; 1/2 Very Active, 1/2 Moderately Active	2,700 "
	Average	3,225 "
3. Treatment:	As above a-3	
4. Average Caloric need, weighted by population		2,796 "
5. Average Caloric need plus 15% for wastage		3,215 "

The calculations would be more satisfactory if they could be based on the height, weight, age, and sex of the patients and the basic metabolism rates and distribution of men and women in the predominate classes of mental disorders were known. The caloric requirements given in the nutritional allowances of the National Research Council are approximate; they are accompanied by the advice that they must be adjusted up or down to meet specific needs. The Canadian Council on Nutrition has felt that there is need for consideration of the average metabolic size or body weight in considering its caloric needs, and have developed their tables in relation to body weight. (Nutrition Bulletin, the Canadian Council on Nutrition, Vol. 2, No. 1, March, 1950)

TABLE V

APPROXIMATE ESTIMATE OF CALORIC REQUIREMENTS OF MENTALLY DISTURBED PATIENTS (EXCLUSIVE OF THOSE RECEIVING THE TREATMENT OR NURSERY RATION)

Percentage Distribution - Previous calculation: Patients', 70%
Workers, 17%; Treatment, 13%

Present distribution: Patients', 80.5%; Workers, 19.5%

Men

a) Liberal to cover ascribed extra caloric needs

Men at work, 19.5%; Active (NRC, Very Active, 4500 calories)		4000 calories
Remainder, 80.5%; Physically Active		3000 "
Average, weighted	3195 calories	
Plus 15%	3674 "	

b) Moderate and believed fairly indicative of the requirements:

Boys 16-20; 1.4%		3800 calories
½ Men at Work, 9.8%; Active		4000 "
½ " " " , 9.7%; Physically Active		3000 "
Average, weighted	2634 calories	
Plus 15%	3029 "	

Women

a) Liberal to cover ascribed extra caloric needs

Women at work, 19.5%; Active (N.R.C., Very Active, 3000 cal.)		2800 calories
Remainder, 80.5%; Moderately Active		2400 "
Average, weighted	2478 calories	
Plus 15%	2850 "	

b) Moderate, and believed fairly correct

Girls 16-20, 0.8%		2400 calories
½ Women at Work; 9.8%; Active		2800 "
½ " " " ; 9.7%, Moderately Active		2400 "
Remainder, 79.7%; Sedentary		2000 "
Average, weighted	2120 calories	
Plus 15%	2438 "	

a) ½ Men, ½ Women, Plus 15%	
Average, weighted	3262 calories
b) ½ Men, ½ Women, Plus 15%	
Average, weighted	2734 "

TABLE VI

APPROXIMATE CALORIC REQUIREMENT HOSPITALS FOR THE MENTALLY DEFICIENT

The caloric requirement for institutions' mentally deficient patients were calculated with following assumptions; for age, sex and activity.

(a) The National Research Council recommended nutrition allowances for age and sex, up to 20 years of age.

(b) Men and Women ages 20 to 34 to be considered physically active and moderately active respectively.

(c) Men and Women 35 years of age and over, considered to be sedentary.

	Male			Female		
Age	Per cent of Population	NRC Allowance	Caloric contribution	Per cent of Population	NRC Allowance	Caloric Contribution
1-3	2.26	1200	27.	2.31	1200	28
4-9	8.55	1500	128	6.20	1500	93
10-12	12.77	2500	319	10.06	2600	262
girls 13-20				15.36	2400	369
boys 13-20	18.43	3800	700			
20-34	35.08	3000	1052	36.07	2400	864
35-over	22.76	2400	546	29.05	2000	581
Total			2772			2197
15% additional			3188			2525

Weighted 55.52% male
44.48% female — 2884. calories

Present allowance — 3000 calories

TABLE VII

FOOD PATTERNS - DEPARTMENT OF MENTAL HYGIENE FOR COMBINED RATIONS, "NO NURSERY", AND TOTAL POPULATION ON PRESENT FOOD CONTROLS WITH THOSE VARIOUS OTHER INSTITUTIONS (POUNDS PER MAN PER DAY)

	Weighted Average			New York State Food Usage (Letter July, 1951)			
	No Nursery	Total Pop. (Incl. Staff)	Iowa (Med. Hosp.)	Insane	Mental Defective	Max. Allowances (------Includes Staff----)	BHNHE Moderate Cost
Meats	.518	.539	.515	.440 (.537)	.391 (.474)	.468 (.655)	.439
Eggs	.094	.099	.194	.120	.102	.125	.125
Milk & Prod.	1.729	1.674	2.023	1.320	1.590	1.675	1.770
Fats, Butter, etc.	.049	.051	.105	.076	.058	.125	
Other	.055	.061	.030	-	-	-	.126
Sugars	.188	.181	.215	.120	.111	.156	.126
Grain Prod.	.617	.617	.469	.503	.557	.656	.447
Legumes Dried Beans etc.	.065	.078	.017	(.042)	(.042)	.042	.027
Vegetables							
Leafy Green & Yellow	.670	.680	.367	(.219)	(.219)	(.219)	.473
Tomatoes	.171	.157					(.100)
Potatoes	.532	.530	.998	.565	.701	.625	.384
Other	.401	.482	.171	.230	.277	.50	.339
Fruits							
Citrus	.158	.112	.377	(.110)	(.110)	(.110)	.201
Other	.210	.284	.237	.215	(.192)		(.125)
Dried	.144	.143	.064	.061	.048	.061	-
Calories	3615	3700		2760	2807	3523	~~2500~~ 2895
Protein gm.	118	121		99.5	102.8	112.1	97.6

Colorado State Hospital (Mental); purchased approx. 0.324 pounds carcass meat per person. This plus .093 pound fish and non carcass meat used in California would be 0.416 pounds.

New York data. The character of the meat used in the mental hospitals in New York State was not given, i.e., whether it was carcass meat or non-carcass, etc. The values for meat are on the assumption that the meat not identified was in carcass form, those in parenthesis that it was all in retail cuts, which were converted to carcass. The values for leafy, green and yellow vegetables in parenthesis were taken from the "Maximum Allowances" and the rest of the vegetables distributed. The citrus fruit is the quantity used in California. Hence the nutritive values are minimal, except for the allowances. The allowance relates to the average total employees as well as patients.

TABLE VIII

Agnews State Hospital - Fiscal Year 1950-51

Food Usage - Pounds per Person per Day

	1st Quarter		3rd Quarter	(4th Quarter)	Approx. Weighted Average	Patients
Meat (carcass equiv.)	.533		.541	.529	.539	.513
Eggs (fresh equiv.)	.123	(Donated .099)	.101	(.089)	.099	.096
Milk (fresh equiv.)	1.633		1.588		1.674	1.728
Fats - Butter	.064	(Donated .071)	.049		.051	.049
" - Other Bacon and Salt Pork	.049		.044		.061	.059
Sugars (Equiv.)	.194		.166		.181	.171
Legumes (dried)	.068		.100		.078	.075
Cereals	.548		.524		.617	.420
Vegetables						
Leafy green		(.568)		(.338)	.680	.440
Yellow		(.612)		(.587)		
Total, leafy green and yellow	1.180		.925		.680	.684
Tomatoes	.167		.191		.157	.104
Potatoes	.482		.537	(Donated .205)	.530	.512
Other	.432		.605		.482	.479
Fruits						
Citrus	.137		.131		.112	.108
Other Fresh	.934		.257	(Donated .042)	.284	.258
Dried	.088		.040		.143	.138
Coffee	.0326		.0279			
Tea	.0025		.0025			
Cocoa	.0029		.0025			

TABLE IX

FOOD USAGE. AGNEWS STATE HOSPITAL
PER PERSON PER WEEK AND DAY;
POUNDS PER PERSON PER DAY

ANNEX Employees - One Week		Average Per Day
Steak (3 @ .50)	1.50	
Meat Pie	.25	
Rib Roast (3 @ .45)	1.35	
Boiled Dinners	.50	
Meat Loaf	.313	
Hamburgers	.33	
Braised Beef	.25	
Breakfast Meat	.47	
Pork Chops	.50	
	5.46	.780
Fish	.25	
	5.71	.816

MAIN HOSPITAL Employees - One Week		Average Per Day
Steaks (3 @ 0.38)	1.14	
Rib Roast (2 @ 0.60)	1.20	
Pot Roast (2 @ .45)	.90	
Meat Loaf (1 @ .20)	.20	
Hamburger (1 @ .20)	.20	
Braised Beef (1 @ .20)	.20	
Frankfurters (1 @ .20)	.20	
Pork Chops (1 @ .38)	.38	
Bacon (2 @ .125)	.25	
Sausages & Ham (2 @ .20)	.40	
	5.07	.724
Fish (2 @ .38)	.76	
	5.83	.833

Cheese and Eggs in addition.

Patients' Week, July 4-10

Spaghetti, meat sauce, etc. (4 @ .06)	.24	
Meat loaf, franks (2 @ .20)	.40	
Roast (1 @ .38)	.38	
Stew (2 @ .18)	.36	
Bologna (1 @ .16)	.16	
Hash (1 @ .14)	.14	
	1.68	.240
Pork (1 @ .06)	.06	
Fish (1 @ .25	.25	
	1.99	.270

Total Week 11-17 June Patients

Meat	1.52	
Fish	.25	
	1.77	.273

Main Kitchen - Estimated

Spaghetti and Meat Sauce (2 @ .08)	.16	
Meat Loaf and Franks (2 @ .20)	.40	
Roast (1 @ .34)	.34	
Rice, etc. (2 @ .04)	.08	
Diced Beef or Vegetables (2 @ .18)	.36	
Beef Hash (1 @ .16)	.16	
	1.50	.214
Pork (1 @ .04)	.04	
Fish (1 @ .25)	.25	
	1.79	.256

(Pork Chops)		Meat as
July 4-16 (1:68/ .06) =	1.74	Purchased
Franks & Bologna	.36	x 1.4 =
	1.38	1.932
	1.932	÷ 7 = 2.76
Franks & Bologna	.36	
	2.29	÷ 7 = 3.26
	Total Meats as purchased	

TABLE IXb

NOTES ON DISTRIBUTION OF BEEF IN A MENTAL HOSPITAL IN THE 4TH QUARTER, 1950-51

The mental hospital studied maintained rather good control over food estimates and utilization. The operations reported upon are cited to illustrate practices which are common in institutions and tend to defeat the operation of the Food Control System.

The data presented show certain wide differences between the allowances of carcass beef per capita as set up under the Food Control System and provided for in the quarterly estimates and the actual usage of beef in that period by two groups within the institution.

The over-usage of beef by these groups - employees, residents, and clubhouse or convalescent patients - reported here would result in a significant reduction in the amount of beef available to the general hospital population.

1. Allowance and usage of beef by employees and residents.

Estimate:

F. C. Quarterly allowance, carcass beef, per capita: 30.12 pounds
average population, man days: 102 plus 16 residences.

Estimated requirement employees: 102 x 30.12 pounds = 3072
" " residences: 16 x 100 = 1600
"Usable" beef (74% of carcass beef): 74% of 4672 = 3458

Usage:

It is customary to supply to employee dining rooms and residents a much higher percentage of beef in the form of steaks and roasts than occurs in carcass beef. Carcass beef as actually trimmed for use by this group yields only 58.4% "usable" beef. Thus the 4672# allowed would provide only 2728# of the beef as used. The cook's report shows that the poundage of "usable" beef (representing 58.4% of carcass beef) as delivered to employee dining rooms is on a basis of 4.10# per capita per week. Of this, 3.10# was in form of steaks and roasts and 1.10# was suitable for stews and "extender" dishes. The average number of persons served at noon was 151; the average for supper was 93; steaks, roasts and meat extender dishes were served approximately equally at noon and night.

Beef actually delivered (58.4% of carcass weight)
Residents (from butchers' reports): 2064# (represents 3534# carcass)
Employees (from cooks' reports): 8587# (14,704# carcass)
Carcass equivalent of purchased beef allowed both groups: 4672#
Carcass equivalent of beef actually delivered both groups: 18,238#
Excess carcass beef used (beyond F.C. allowance): 13,566

2. Allowances and Usages of Beef in Club Houses (Men's and Women's).

As estimated:

F. C. quarterly allowances, carcass beef, per capita, for workers: 29.67#

Average population: 95

Estimated requirement: 95 x 29.67# = 2840# carcass beef

"Usable" beef (74% carcass): 74% of 2840 = 2085#

Usage:

"Usable" beef delivered (butchers' report)	8647#
Carcass beef required to supply 8647# (74%)	11,672#
Excess carcass beef used (beyond F.C. allowance)	8,832#

3. Capitulation.

Estimated allowance carcass beef for residents and employees	4,672#
Estimated allowance carcass beef for club houses	2,840#
Total quarterly allowance	7,512#
Amount carcass beef used to supply residents and employees	18,238#
Amount carcass beef used to supply club houses	11,672#
Total	29,910#
Amount carcass beef used in excess of estimated F.C. allowance	22,398#

If this excess usage was actually diverted from an overall planned and delivered poundage as provided by F.C. for the institution's total personnel, based on comparable per capita allowances for all groups, it is obvious that the great majority of the patient population received less than the allowance provided them under the F.C. ration as set up. The average total patient population of the institution for the quarter was 3860. If the over-usage reported above was divided equally among the population, it would provide each person with an additional 5.26 ounces of "usable" beef each week.

Note: Information on the number of persons and detail of procedure used in determining the food required for employees and residents available at the institution differed somewhat from that at the Departmental level. The original calculations were based on 87 persons, later it was learned that the correct figure was 102 employees and 16 resident households and that 100 pounds of beef was allowed per household per quarter. The calculations are based on these figures.

Comment:

(a) The problems involved at the particular institution are appreciated. They have requested a special allowance of meat (separate from the estimates for patients) to cover the usage of residents for the 1st quarter of 1951-52. This is a realistic approach.

(b) The beef used by employees and residents is chiefly from the loins and rib cuts of the carcass. These cuts are specially trimmed to remove a larger proportion of the separable fat and bone than is customary in commerce. This practice results in 5% more lean, on the carcass basis, than would be provided from the carcass (utility cow) as purchased. The rib cuts normally contain 57.8% separable lean while the meat as commonly sold contains approximately 73.3% separable lean.

(c) Observation at other institutions has given the impression that in many cases the apparent diversion of beef to employees and residents is greater than has been found in this particular case. Furthermore, this particular institution did not overemphasize the use of meat at noon. It served roasts and steaks approximately equally at dinner and supper. Many institutions serve such cuts almost exclusively for dinner when the largest proportion of people eat at an institution.

(d) While the data has been presented only for beef, the practice applies also to pork. In this case the employees and residents usually purchase hams and well trimmed loins.

(e) The diversion of meat from the patient to employee is not the result of marked excessive use of meat by the individual employee, although the quantities of meat used are greater, for the kind and price of meals served than would be expected outside. It results rather from the disproportion of persons eating the meals at which a large portion of meat is served. This is due to two reasons, (1) more people eat the noon meal than the night meal and more the night meal than breakfast; (2) a larger proportion of the residents and employees eat in the dining room when steaks and roasts are known to be on the menu than when meat extender dishes are served. This requires more meat even though the serving may be moderate and well controlled (as it was in the institution from which the data was obtained).

The average quantity of meat purchased by the resident households, 0.284 pounds beef per person per day, was not excessive. The total meat, fish and poultry purchased, on a carcass basis, was 0.474 pounds per person per day.

An approximate calculation of the nutritional adequacy of the diets supplied the particular patients who received the reduced quantities of meat served shows that the diet was more than nutritionally adequate. It contained 110 grams of protein of which 52 grams came from animal sources. These 52 grams of animal protein represent 75% of the 70 grams of protein recommended by the National Research Council. The diet contained sufficient vitamins to assure an adequate diet even with the losses in cooking characteristic of institutions. Furthermore, the diet for general patients was rather satisfying as personally determined for a week. The improvements in preparation which the Food Administrator is striving to effect will make it even more satisfactory. The use of all the meat planned for the patients will result in further satisfaction.

TABLE Xa

Meat Usage - Agnews State Hospital, 4th Quarter 1950-51
("Meat" is all varieties but without fish or canned fish
and no correction for carcass equivalent.)

(Note: The meat utilized by employees is calculated from values for meat used by the cooks in ordering for weekly menus. It represents the quantity used weighted according to the number actually eating.)

From Butcher's Report of Meat Issued

	Main Kitchen	Club	Annexes	Residences	Total
Patients	61,966	9,605	50,642		122,213
Employees	11,887		3,646	3,934	19,467
Total	73,853	9,605	54,288	3,934	141,680
Usage 4th Quarter					162.341

Average per person per day

Butcher

Patients Main Kitchen and Club	.374
" Annexes	.354
" Annex July 11-17 x 1.4	.350

Employees from Cook's Estimates for Menus

Cook's quantities for one man 3 meals	.75
Based on Av. meals eaten day divided by 3	1.061
Based on above, weighted for attendance at each meal	1.742

Food Control (Carcass equiv., Without fish)

Patients	.429
Treatment	.464
Nursery	.319
Employees	.650

TABLE Xb

Meat and Beef Usage at Agnews State Hospital from the Butcher's Issue Records to Employees -- May 8 to July 3, 1951 -- 63 days

Note: These data reflect the quantities of meat as issued and excluding fish sent to the kitchen of the employees dining room. The total amounts are in approximate agreement with the per capita weights used by the cooks in planning meals. The per capita figures obtained below are the result of the application of the average number of persons eating: breakfast, 31; dinner, 151; supper, 93. The patients that assist in the dining rooms often eat the food prepared for the employees, but the data are not corrected for them.

Meal	Beef, Pounds	Carcass Meat, Pounds	Total Meats, Non-Carcass Meat, Pounds	Total Carcass Equivalent. Pounds
Breakfast	-	-	261	495
Dinner	4,646	5,510	137	5,647
Supper	3,370	3,982	155	4,137
TOTAL	8,016	9,492	553	10,279

Per Capita Usage

Breakfast		.253
Dinner	.488	.594
Supper	.575	.700
	1.063	1.547

Quantity Required for a Quarter on the Basis of Usage

Breakfast	-	.715
Dinner	6,711	8.157
Supper	4.868	5.976
	11,579	14.848

Calculated usage of meat (exclusive of fish) from quantities of meat used by the cooks in estimating the amounts required for issue, per week.

	Amount per Week Used Pound	Amount per week as purchased (x 1.4) Pound	
Breakfast	.65	.65	
Dinner	2.52	3.728	
Supper	2.18	3.052	
Total pounds per week	5.35	7.430	
			Quantity per Quarter x 91
Average per day	.764	1.061	96.59
Average per day weighted by meals 31-151-93		1.742	158.50

TABLE Xc

VEGETABLE AND FRUIT USAGE - 1950-1951
DEPARTMENT OF MENTAL HYGIENE
(Pounds per Man per Quarter)
(Fresh Equivalent)

	1st Quarter		3rd Quarter	
	North	South	North	South
VEGETABLES				
Leafy and Green				
Fresh	34.2	27.5	21.6	28.2
Canned	2.0	7.9	3.1	6.4
Total	36.2	35.4	24.7	34.6
Yellow				
Fresh	28.2	22.1	21.8	15.9
Canned	.2	.2	6.0	.1
Total	28.4	22.3	27.8	16.0
Total, Leafy, Green and Yellow	64.6	57.7	52.5	50.6
Tomatoes				
Fresh	6.2	16.3	0.1	-
Canned	11.8	11.2	16.2	12.1
Total	18.1	27.5	16.3	12.1
Potatoes	43.0	44.1	37.2	46.8
Other Vegetables				
Fresh	33.5	35.3	40.8	45.8
Canned	1.1	3.2	2.7	5.2
Total	34.6	38.5	43.5	51.0
FRUITS				
Citrus				
Fresh	12.2	6.5	12.2	8.5
Canned	3.3	5.8	2.8	3.5
Total	15.5	12.3	15.0	12.0
Other Fruits				
Fresh	26.2	20.6	2.7	7.5
Canned	20.1	17.4	16.4	16.2
Total	46.3	38.0	19.1	23.7

SUMMARY: REPORT AND RECOMMENDATIONS ON
THE DEPARTMENT OF MENTAL HYGIENE

The review of the food allowances for the Department of Mental Hygiene and observation of the operation of the Food Control System indicate that:

a) The quantities and kinds of food in the present allowances are sufficient to prepare and serve adequate wholesome meals when used as planned. They are also suitable as a basis for the determination of the cost of food. There is not, therefore, in my opinion, sufficient justification from the point of view of public policy or expense for the increase requested.

b) There is evidence of a gradual continuing improvement in the character of the meals served. Progress in the improvement of food service operations are inherently slow because they must be accomplished against the background of the past which was less concerned with improvements. The Culinary department must continue to produce meals with regularity and on time in spite of personnel that vary in numbers, competence and dependability, an eight-hour-day and five-day week with overlapping shifts of workers; and in some places with inadequate quarters and obsolete equipment.

The improvement in the quality of meals is the result of:

1) The introduction of the Food Control System, backed by the State policy to provide the food to operate it regardless of price fluctuations.

2) A recognition of the importance and prominence of meals in the minds of patients and agreement that good meals contribute to the patients' peace of mind which is an element of rehabilitation.

3) The employment of food service supervising personnel to plan, direct, and immediately oversee the procurement, preparation and service of food. These include:

a) adequately trained and experienced food administrators,

b) experienced supervising cooks who are responsible for the techniques and details of mass food preparation and service, and the maintenance of the standards of quality desired.

4) The provision or plans for new or redesigned kitchens and kitchen equipment, better transportation of food and improved service areas and dining rooms and dining room equipment.

5) Improved methods of serving food.

c) Further progress, which will meet most of the objectives of the Department of Mental Hygiene when asking for larger food allowances, can be expected through:

1) The separation of the purchase, distribution and accounts of the food supplied employee dining room and residents from that for patients.

2) The appointment of food administrators to all institutions having operations that justify them and provision for secretarial assistance for all institutional and departmental food administrators. This will free them to integrate food service operations and coordinate the food service with the general program of the institutions.

3) Provision for and appointment of general dining room supervisors as distinct from those that may be in immediate charge of a dining room in large institutions to serve under the food administrator and assure the proper service of well-prepared food.

4) An in-service-training program for supervising cooks and cooks, and the indoctrination of new cooks in the operation of institution kitchens as contemplated under the developing program for better meals.

5) The development and publication of suitable material on institutional food service operations, in cooperation with other departments and agencies, for the use of and indoctrination of all personnel as well as the training of supervising cooks, and cooks, and in-service training.

6) Adherence to the formal plan for the use of food in the food control by institutions without a food administrator. An exception might be made in the case of institutions with superior supervising cooks, and until a food administrator becomes available.

7) Granting permission for changes in the kinds and quantities of food within certain of the food groups of the food control. Such changes should only be within the cost of food, established under a steady market, for a particular food group or groups under the existing food controls. Formal assurance should be given by the institution requesting changes that the modifications will not seriously affect the adequacy of the diet. Such changes should be permitted only where a food administrator is present to assure the preparation and service of adequate meals of sufficient variety to be attractive and acceptable.

8) The establishment and support of an experimental kitchen in one of the larger institutions for the study and development of improved methods of cooking under institutional conditions and standardization of recipies and methods of preparation. The use of such standardization has been found to aid the development of procedures and recipies in institutions.

9) The establishment of a demonstration kitchen in an institution, with complete equipment and effective use of the food control. This should not increase costs unless it is used for in-service-training when an instructor will be required.

10) Adoption of two rations in place of the four present rations (General Ration, Treatment Ration, Workers' Ration, and Nursery Ration), based on the present food allowance for each ration weighted for the average distribution of the rations in relation to population on each ration. One of these rations should be weighted on the present population of institutions with few nursery patients and the other on the present population of

institutions with a considerable proportion of nursery patients. This procedure will supply a pool of food based on the patient population which can be utilized to meet the needs of the patients in accordance with specific instructions from the Department. (This is, in effect the present practice.)

11) Provision for additional food for cases requiring considerable quantities of particular foods for limited periods of time, such as one week or month, and certification by the physician in charge that the food is required for "therapeutic purposes". Such food would be used and supplied in quantity for the patient or patients certified and accounted for under the heading "therapeutic feeding". In actual operations the required food, if available at the institution, would be drawn from the general supply and replaced there upon delivery of the food requested in the special order. If a limit is to be placed on the amount of money that may be used for food for therapeutic purposes, it should be requested and defended under the above title, in the same way that drugs and medicines are handled.

In the course of my review of the request for additional food by the Department of Mental Hygiene reference has been made to the food allowances of the Department of Corrections. I have therefore reviewed the ration for the Department of Corrections in relation to that provided in the Department of Mental Hygiene. The data are contained in Table I.

If a comparison between the Department of Mental Hygiene and Corrections is justified it should be made on a comparable basis. Direct comparison is difficult since the Department of Mental Hygiene food allowances are provided for a population in which men and women are fairly evenly divided, whereas the Department of Corrections cares for and feeds men and women in separate institutions. The nearest approach to a suitable basis for comparison would be, therefore, to average the allowances for men and women used in the Department of Corrections. The comparison then would be between the average ration for men and women in Corrections and the Workers Ration of Mental Hygiene. When this is done the food allowances of the Department of Mental Hygiene exceed those of the Department of Corrections in fair amounts of the order of 1/2 ounce or more per person per day of meat, milk, grain products, leafy green and yellow vegetables, other fruits and dried fruits and in all nutrients except fat. The Department of Corrections excels that of the Workers Ration in the Department of Mental Hygiene in Fats, Sugars, Legumes, dried; potatoes; other vegetables and citrus fruit, with a trace of tomatoes. The higher intake of leafy, green and yellow vegetables in the rations of the Department of Mental Hygiene assured a nutritionally better diet than would one with more fruits. This is especially true if the difference is composed largely of leafy and green vegetables. The diet, however, may not be as acceptable as one in which fruit replaces some of the vegetables. It is assumed that one of the adjustments to be made by the Department of Mental Hygiene will be to utilize more fruit within the cost of the leafy, green and yellow vegetables and beet roots, parsnips and rutabagas and possibly some of the dried fruits now used.

TABLE I

COMPARISON OF FOOD PATTERNS, IN POUNDS, OF THE DEPARTMENTS OF MENTAL HYGIENE AND CORRECTIONS

Comparison should be based on the average of Tehachapi and San Quentin for Men and Women, to correspond with a similar distribution of sexes in the food patterns of the Department of Mental Hygiene. Under Difference a figure indicates that it is the quantity, in pounds, by which that food pattern exceeds the one compared. Differences in favor of the General or Workers ration are accompanied by the letter G or W and underlined.

	Mental Hygiene		Corrections			Difference General-Workers	
	General	Workers	Men (San Quentin)	Women (Tehachapi)	Average Corrections Men--Women	vs. Av. Corrections	vs. Av. Corrections
Meats	.500	.535	.600	.400	.500	-	.035W
Eggs	.089	.089	.089	.089	.089	-	-
Milk, etc.	1.524	1.856	1.229	1.750	1.465	.059G	.391W
Fats							
Butter, etc.	.046	.046	.046	.045	.045	-	-
Other	.052	.061	.123	.099	.111	.059	.050
Sugars	.182	.203	.203	.203	.203	.021	-
Grain Prod.	.614	.624	.750	.415	.582	.032G	.042W
Legumes	.065	.065	.152	.060	.106	.041	.041
Vegetables							
Leafy green, yellow	.670	.670	.500	.385	.442	.228G	.228W
Tomatoes	.171	.171	.176	.170	.173	.002	.002
Potatoes	.528	.553	.700	.600	.650	.122	.097
Other	.400	.400	.400	.486	.443	.043	.043
Fruit							
Citrus	.110	.110	.173	.241	.207	.097	.097
Other	.166	.315	.250	.330	.290	.124	.025W
Dried	.144	.144	.057	.045	.051	.093G	.093W
(Calc.Calorius)	(2734)				(2801)	(67)	(161W)
Calories	3428	3758	4174	3289	3732	304	26W
Protein, gm.	114	122	131	100	116	2	6W
Fat, gm.	126	139	166	140	153	27	14
Carbohydrate, gm.	478	510	541	414	478	-	32W
Calcium, gm.	1.29	1.48	1.21	1.32	1.27	.02G	.21W
Phosphorus, gm.	1.88	2.06	2.08	1.80	1.99	.11	.07W
Iron, mgm.	23.4	24.3	26.9	19.0	23.0	.4G	1.3W
Vitamins							
A, I. U.	14,330	14,780	11,250	9,900	11,580	2,750G	3,200W
Thiamine, mgm	2.38	2.50	2.85	1.94	2.40	.02	.10W
Riboflavin, mgm	2.81	3.12	2.88	2.60	2.74	.07G	.38W
Niacin, mgm	26.0	27.2	31.4	20.8	26.1	.1	1.1W
Ascorbic acid, mgm	169	175	174	176	175	6	-

COMPARISON APPROXIMATE ENERGY REQUIREMENTS
DEPARTMENT OF MENTAL HYGIENE AND DEPARTMENT
OF CORRECTIONS IN RELATION TO NATIONAL
RESEARCH COUNCIL ALLOWANCES - PLUS 15%
FOR WASTAGE AND MANAGEMENT

	Department of Mental Hygiene	Department of Corrections
Liberal		
Men	3674	3121
Women	2850	2226
1/2 Men, 1/2 Women	3262	2796
Moderate		
Men	3029	3187
Women	2438	2515
1/2 Men, 1/2 Women	2734	2801

Note: Liberal in the case of the Department of Mental Hygiene is for an assumed higher degree of basal metabolic activity of all patients and no allowance was made for boys or girls under 20 years.

Liberal in the case of the Department of Corrections includes an allowance of 4000 calories for all men and 2800 calories for women for workers. (This allowance for "Active" patients is slightly less than the NRC allowance of 4500 for "Very Active Workers" or 3000 calories for Women) and the remainder are Sedentary.

Moderate for the Department of Mental Hygiene includes NRC allowances for boys and girls under 20 years and the workers are divided equally between Active and Moderately Active.

Moderate for the Department of Corrections is the same as for the Department of Mental Hygiene. The fact that the average is higher is because the effect of allowing for boys and girls was greater than the reduction due to the subdivision of the workers.

There is a major difference between the two sets of results in the case of the liberal assumptions: for the Department of Mental Hygiene where the high allowances were used for everyone. There is not a great difference at the moderate level.

Comparisons between the two agencies, if this must be made, should be at the moderate level. The rations are not subdivided for the two sexes hence comparison with the Department of Corrections must be on an assumed distribution between the allowances for the Women's Institution and the Institution for Men other than the Vocational Correctional Institution.

DEPARTMENT OF VETERANS AFFAIRS

Comments on the food allowances of the Department of Veterans Affairs and their nutritional adequacy: The Department of Veterans Affairs is responsible for the operation of two facilities, both homes for elderly people, the Veterans' Home of California and the Woman's Relief Corps Home. The latter home has only 24 members, most of whom are frail, many are bedridden. Members of the Veterans' Home have some disability which, combined with their age, results in considerable hospitalization or convalescent care.

Organized information on the food controls and their nutritive content were available for review of the operations of both institutions. In addition a year's nutrition accounts were available for the Veterans' Home to show the actual use of food from month to month. The nutrition accounts not only simplified the review but had been used in operations. Their use had demonstrated the possibilities and value of such records in the administration of an institution. The food patterns and their nutritive value are given in the attached table.

The food controls of the institutions indicate that they supplied food that will permit the preparation of satisfactory meals that will be nutritionally adequate. The nutrition accounts of a year's operations of the Veterans' Home, under a Food Manager, working with good facilities and administrative support, have shown that very acceptable, nutritionally adequate meals were being supplied with less food t than contemplated in the food allowances. (This was to be expected since the food allowances carry an excess of food over requirements to take care of wastage, other than food preparation waste, mismanagement and use by the average cook. These operations illustrate the value of good supervision.)

General Comment: The Veterans' Home is about to undertake the care of women members. The present food allowances are sufficient for both men and women. There may be a slight shift in the average food pattern over that used for men which can be accomplished with the present food allowances. With the nutrition accounts, it will be possible to follow the use of food to determine whether a modification in the allowances will be desirable.

I was particularly impressed with the culinary operations of the Veterans' Home and the types of meals supplied as well as the care and feeding of the members at the Women's Relief Corps Home.

The problem of determining the most acceptable procedure for control of the distribution of nourishments in hospitals was under consideration during my visit at the Veterans' Home. The early results of the program adopted have shown possibilities of success.

DEPARTMENT OF VETERANS AFFAIRS

Basis Food Control - Pounds per person per day in Standard state.

	Veterans' Home	Women's Relief Corp Home
Meats	.700	.363
Eggs	.178	.181
Milk Porducts	1.900	2.060
Fats		
Butter, Oleo.	.0631	.074
Other	.0831	.046
Sugars	.257	.200
Grain Products	.410	.360
Legumes, dried	.040	.014
Vegetables		
Leafy, Green) Yellow)	.550	.300
Tomatoes	.160	.090
Potatoes	.500	.330
Other	.420	.300
Fruits		
Citrus	.230	.219
Other	.206	.500
Dried	.038	.022
Calories	3679.	2907.
Protein, gm.	122.	95.
Fats, gm.	170.	117.
Carbohydrate, gm.	419.	354.
Calcium, gm.	1.44	1.32
Phosphorus, gm.	2.07	1.71
Iron, mgm.	22.	15.8
Vitamins		
A. I. U.	10250.	7.230*
Thiamine, mgm.	1.28	1.41*
Riboflavin, mgm.	2.63	3.06*
Niacin, mgm.	15.2	9.7*
Ascorbic acid, mgm.	115.	69.*

* Corrected for cooking losses

Hospitals, Medical. The food controls for medical hospitals of institutions must provide sufficient quantities of food for the preparation of diets which may be prescribed by the physicians. They do not represent, except in a general way, the quantity of food the average patient requires. The problem of feeding hospital patients contains a large element of the encouragement of the patient to eat. Hospital feeding is largely based on experience and includes a general diet and seven or eight commonly used special diets. Additional special diets should be dictated by developments of science and experimental evidence.

The food controls now in use contain the experience of hospitals plus a high proportion of food to cover the difficulties of control of food distribution as well as occasional appropriations of food (such as fruit juices and eggnogs) by the employed personnel. The Department of Corrections is solving some of these problems by feeding many of the ambulatory patients in the main dining room. Individuals with metabolic disturbances, such as diabetics and those receiving salt free diets, are protected by being fed before the rest of the inmates.

The Departments of Veterans Affairs and Mental Hygiene have a sufficient number of cases to justify the use of dietitians to plan the diets upon physician's prescription and to check the food intended for individuals and groups of individuals receiving the same diet. These agencies have the usual problems of distribution of nourishments and mis-use of nourishments by employees and wards. I was invited to sit in on the development of a program at the Veterans' Home to take care of this problem. It appears to be proceeding successfully.

The Department of Education operates a hospital at the School for the Deaf for both blind and deaf children. The institution food administrator, Grade I of the School for the Deaf is responsible for any special diets that may be needed.

The Youth Authority has small hospitals at each facility except the camps. The regular food allowances are used as a source of food except at the Preston School where additional butter, eggs and milk are provided for hospital use.

A better evaluation of food controls for hospital use will be possible as the medical profession determines the extent to which nutrients and concentrates can be used to supplement the general diets, sufficient for most cases, rather than the arbitrary use of particular foods without regard to the total nutrient content of the diet as a whole.

The following comments on the therapeutic use of food which appear elsewhere (nutritional adequacy) are appended here because of their relation to hospital feeding.

The advances of the science of nutrition, chemistry and physiology in recent years have only recently made it possible to appraise the nutritional phases of institutional feeding operations and to differentiate between the apparent effects of food itself and that of the diet as a whole, especially in terms of specific nutrients, its nutritional content in general and one or more of its nutrients. Knowledge of nutrition has progressed to the point where the National Research Council has been able to establish nutritional allowances in terms of specific nutrients, based on age-sex-activity requirements, sufficient to provide a high level of adequacy. With these allowances, the tables of food composition and knowledge of the possibility of losses in food preparation and processing, it is possible

to determine to a close approximation the specific nutrient content of a diet.

Furthermore technological changes have made pure nutrients or concentrates of them available for use in the treatment of cases of general or specific forms of malnutrition. The physician is thus in a position to prescribe additional amounts of specific nutrients or groups of nutrients to the institutional diet already available, since it is based on recognized standards of nutritional adequacy, and the amount and kind of the nutrients it furnishes can be calculated with a fair degree of accuracy. Such a procedure seems especially appropriate for physicians working in public institutions since modifications of the standard diets may require arbitrary additions of relatively expensive foods which, without the assurance of improvement or cure of the patient, would mean an added and hardly justified cost to the public.

The use of interesting foods such as milk, eggs, and fruit juices in hospitals and especially for between-meal nourishment is a common possible use of food beyond that contemplated in the rations of the Food Control. The quantities of food provided in the allowances for hospitals are sufficient to cover the needs of almost any special diets that would be required by the number of patients anticipated. The over-use of eggs and milk for eggnogs and fruit juices in between-meal nourishments in relation to what is provided for an institution is so common a complaint that it can be assumed that the practice is general. Another involves the use of the foods which were intended for patients in the employees dining room. The use of special foods and nourishments should be restricted in time and number to the patients for which they are essential. There is also a need to review the purpose for which nourishments or special foods are intended; if it is primarily to improve the nutritive condition of the patient, the composition of the nourishments and the diets available, as well as the nutritive needs of the patient must be considered and the decision made on that basis.

The solution of the problem of therapeutic feeding and nourishments must be relatively simple, as all effective procedures must be for public institutions, else it will become top heavy with reports and extra personnel. The use of nourishments and nutritional therapy is determined by the physician. In many cases the physician prescribes both the nutrients needed and the details for supplying it in the form of particular foods rather than the type of therapeutic diet required. The prescription is based on his diagnosis and, if at variance with the standard diets in use in a hospital, he specifies the food nutrients required. The desirable procedure, as previously indicated, is for the physician to inform the food administrator of the nutrients desired, and the length of time they are to be supplied. To obviate the mis-use of diets, he should restrict his prescription to a specific time, not longer that a week or month depending on the diet. At the end of that time he should review the need and if necessary re-prescribe. The restriction of diets to one week is a regulation of the Department of Mental Hygiene. There are possibilities of supplying the nutrients required for rehabilitation through special preparations which would be more effective than the routine use of eggnogs or fruit juices without fortification.

The need for a review of the use of nourishments and special foods is the consequence of lack of control over their use and not the occasional mis-use. Variations from the regular diets and use of interesting foods between meals are, in most cases, temporary adjustments for nutritional therapy to assure an adequate diet and speed the recovery of the patient. Their mis-use in the light of public policy and effective operation of public institutions lies in the continuation of the diets beyond their justifiable need, and the necessity to administer them in

open wards of a hospital. The latter makes it difficult to restrict diets and special nourishments to the patients that need them, as against supplying them to the ward as a whole. There are enough borderline cases of need for special diets, and use beyond reasonable need, added to those of misuse by ward attendants and staff, to involve a questionable use of a considerable quantity of food. The quantities are sufficient in some cases to make it difficult to prepare satisfactory meals for the rest of the population of the institution within the food control allowances.

My observation of the operations of the institutional food administrator in relation to the therapeutic phases of the medical problems of institutions is that suitable use is not being made of the professional training of the food administrator as a dietitian in addition to his responsibility for the operation of the food service department under the food control. In some cases he is not included in the medical staff meetings, even periodically, where he could represent the food service side of feeding and the food nutrients available through the food service.

FOOD ALLOWANCES OF HOSPITALS OF VARIOUS AGENCIES
(in pounds per person per day
of food groups in the standard
state)

	DEPT. CORRECTIONS	DEPT. MENTAL HYGIENE (treatment ration)(1)	DEPT. VET. AFFAIRS
Meats	.600	.542	.750
Eggs	.179	.125	.265
Milk & Products	2.319	2.645	2.500
Fats			
Butter, etc.	.068	.068	.068
Other	.123	.064	.107
Sugars	.204	.203	.256
Grain Products	.750	.624	.675
Legumes, dried	.113	.065	.037
Vegetables			
Leafy green) Yellow)	.500	.670	.558
Tomatoes	.176	.171	.160
Potatoes	.700	.528	.500
Other	.400	.401	.470
Fruits			
Citrus	.299	.479	.600
Other	.250	.315	.226
Dried	.057	.144	.046
Calories	4601	4158	4098
Protein, gm.	163	138	137
Fat, gm.	197	165	196
Carbohydrate, gm.	561	539	451
Calcium, gm.	1.79	1.93	1.80
Phosphorus	2.53	2.44	2.38
Iron, mgm.	27.6	25.4	24.0
Vitamins			
A.I.U.	12,780	16,070	13,500*
Thiamine, mgm.	3.02	2.71	1.42*
Riboflavin, mgm.	3.77	3.79	3.32*
Niacin, mgm.	31.4	27.9	16.1*
Ascorbic acid, mgm.	200	239	170

*Losses in preparation deducted.

1)The treatment ration is used for medical cases as well as for general treatment of patients who need a different type of diet from that provided by the general or workers ration.

FOOD ALLOWANCES FOR EMPLOYEES OF VARIOUS AGENCIES.

Employees are fed at the facilities of all agencies. The food allowances and the approximate nutritional adequacy of the allowances for various agencies are contained in Table I.

In all cases the food allowances are very liberal if they represent the food actually eaten by one person in a day. Actually, relatively few persons at any facility take all of their meals in the employees' dining room. The effect of this practice in relation to the method of estimating purchases is contained in "Better Distribution and Control of Food" in the general report.

The basis of feeding employees varies in the different agencies. The Department of Corrections requires that the employees' dining room live within the food allowances purchased for the employees. The Youth Authority requires that special reports be made of additional food used for special dinners when the number of guests is more than 10% of the population served. Employees in forestry and road camps of both agencies have the same food allowances, and eat the same menu as the wards. This is also true of the Veterans' Home. The problems of ordering food where a different food allowance is used from that fed the wards have been referred to above.

Where the wards of the State assist in preparing and serving food in kitchens and dining rooms apart from the main kitchen they consume food charged to employees. In the Youth Authority the boys and girls are fed before they work in the dining rooms. The food allowances cover all of the variables mentioned. If the present method of conducting employees' dining rooms is followed there is need for a review of the food allowances and correction in relation to the number of persons fed at each meal.

The procedure for feeding employees is under study in the Department of Finance. If the adoption of a new plan is likely to be delayed for some time it would be desirable for the Department food administrators to prepare a quarterly food control based on the three meals of the day and size of portion per meal. The purchase and use of food should then be based on the average attendance at the various meals in the last quarter. The procedure of determining and using additional food for special dinners employed by the Department of Corrections and Youth Authority is a good one.

Meal services for employees are provided in most institutions or facilities. In the past it was desirable and in many cases necessary to provide meals for employees who lived at the institution or were on duty at meal time to care for the wards. This practice is changing with improved transportation, growth of communities near the institutions, and different attitudes of the public with regard to direct compensation for services rendered. At present the practice is to charge employee and residents the actual cost of meals or food purchased.

Food, particularily meat, eggs, milk, and butter, are planned and purchased for the use of employees and residents on the basis of the employee food allowances provided in the Food Control. The total number of meals served are reduced to man-days without regard to differences in the average number of persons who eat at the different meal times. Such estimates of employee population give a distorted picture in many institutions where larger portions of meat are served at noon than at night and more people eat both at noon and on the days steaks and roasts appear on the menu than when meat extender dishes are served. In many institutions no limit is set on the amount of food residents may purchase for use in their homes, although the method of estimating the food for residents is rather arbitrary.

Estimations arrived at on the unrealistic basis indicated above results in the purchase of less meat than is required for the noon meals and too much of the kinds of food served at breakfast. It has been customary to draw food from the general pool without compensatory subsequent purchases to replace the overdrawal. This practice is recognized as unsound and is prohibited by the Youth Authority administrators but it still persists in other agencies. There is a tendency to utilize the more desirable cuts of the carcass for the employees and residents and to permit the bakery to spend time on special bakery products for them. A part of the butchers' and bakers' and cooks' salaries is covered by the charge made for meals and for food sold.

The use of more meat than estimated is further increased by the method of trimming the cuts supplied employees and residents. For this purpose a larger proportion of bone and fat is removed than is common in commercial or institutional practice, which means that a larger proportion of the ration of cardass meat is required to supply these cuts than is indicated by the weights of meat as used.

The effect of these practices is to make less meat and other foods available to feed the inmates or patients than is included in their ration and provided for them in the quarterly allowances. A decision with regard to the feeding of employees and the sale of food to residents is a matter of State policy. The principle has been established that "maintenance for self and family" is not to be included as a part of an employee's compensation. To establish the fact that the price charged for a meal covers the cost of food and a proportionate share of the labor cost requires careful accounting of food used and appropriate audits.

The process of conducting a food service for employees within that of feeding the wards of the State presents complications in accounting for the food used and giving assurance that food is used as intended. A suitable procedure might be to purchase the food as at present but to draw it from the commissary and account for it in the same form as purchased, and to prepare and serve it in kitchens and dining rooms separate from the main institution kitchens.

Note: There are special cases in the Youth Authority and in Prison Camps of the Department of Corrections in which separate operations for employees is not justifiable. The practice there is to serve the employees the same meals as those prepared for the boys or the prisoners. This solves some of the complications of equitable distribution and at the same time improves the morale of the wards.

Food Allowances for Employees of Various Agencies
(Pounds per person per day standard state)

	Department of Corrections	Department of Mental Hygiene	Youth Authority and Department of Education *
Meats	.766	.781	.75
Eggs	.253	.253	.24
Milk and Products	2.087	1.916	2.66
Fats			
Butter, etc.	.112	.112	.11
Other	.198	.155	.12
Sugars	.204	.243	.29
Grain Products	.580	.584	.70
Legumes, dried	.047	.029	.05
Vegetables			
Leafy Green)			
Yellow	.500	.670	.40
Tomatoes	.176	.201	.17
Potatoes	.700	.465	.50
Other	.400	.401	.40
Fruits			
Citrus	.418	.282	.33
Other	.500	.367	.56
Dried	.057	.112	.06
Coffee	.0975	.081	.0975
Tea		.0025	.0025
Cocoa			.0055
Calories	4863.	4649.	5161.
Protein, gm.	146.	141.	159.
Fat, gm.	254;	233.	248.
Carbohydrate, gm.	503.	504.	577.
Calcium, gm.	1.63	1.55	2.00
Phosphorus, gm.	2.40	2.28	2.72
Iron, mgm.	26.3	26.6	27.4
Vitamins			
A. I. U.	14,040.	16,640	10,990
Thiamine, mgm.	2.74	2.61	1.93
Riboflavin, mgm.	3.65	3.53	3.54
Niacin, mgm.	31.0	30.3	28.0
Ascorbic acid, mgm.	224.	202.	123.

*The employees allowances in the Department of Education are generally similar to those of the Youth Authority, with minor variations in relation to the food provided the children.

REPORT OF REVIEW COMMITTEE

ON

NUTRITION POLICIES, PRACTICES AND OPERATING PROCEDURES AT RESIDENTIAL FACILITIES OF THE DEPARTMENT OF MENTAL HYGIENE OF THE STATE OF CALIFORNIA

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COMMITTEE

Dwight L. Wilbur, M. D., Chairman

Frances H. Sleeper, M. D., Member

Mary C. Zahasky, Member

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August, 1952

REPORT OF REVIEW COMMITTEE ON NUTRITION POLICIES, PRACTICES AND OPERATING PROCEDURES AT RESIDENTIAL FACILITIES OF THE DEPARTMENT OF MENTAL HYGIENE OF THE STATE OF CALIFORNIA

August 1952

I

A review Committee was appointed by James S. Dean, Director of Finance, to consider the "Report and Recommendation on Nutrition Policies, Practices and Operating Procedures of the State of California in Feeding at Residential Facilities of the Department of Corrections, Youth Authority, Department of Education, Department of Mental Hygiene and Department of Veterans' Affairs", by Dr. Paul E. Howe and to consider the objections to this report by Dr. Frank F. Tallman, Director of Mental Hygiene.

II

The following members of the Review Committee were appointed by James S. Dean, Director of Finance:

Mrs. Mary C. Zahasky - Director of Dietetics - University of Oklahoma Hospitals, Oklahoma City, Oklahoma. (See Appendix A)

Francis H. Sleeper, M.D. - Superintendent, Augusta, (Me.) State Hospital, Augusta, Maine. (See Appendix B)

Dwight L. Wilbur, M.D. - Clinical Professor of Medicine, Stanford University School of Medicine, San Francisco, California. (See Appendix C)

III

The major reasons for the request for a review of the Howe report and Tallman comments are included in letters addressed to prospective committee members by James S. Dean, Director of Finance, California, dated April 25, 1952, as follows:

"For about a year there has been under consideration the adequacy of this State's budgetary allowances for food and personnel for feeding the wards and patients in its hospitals and other institutions. Dr. Paul E. Howe, Nutrition Consultant of the U. S. Department of Agriculture, was employed to make a study and report of the State's nutritional policies, practices, and operating procedures. His report was completed and submitted last fall. In general, his report indicates that existing rations are sufficient for nutritionally adequate diets and acceptable meals, that improvement in the quality of meals could be accomplished by augmenting culinary personnel and giving greater attention to their training.

"Dr. Frank F. Tallman, Director of Mental Hygiene, who is responsible

for the care and treatment of approximately 40,000 patients in 12 hospitals, feels that the report does not give adequate attention to the medical and psychotherapeutic functions in the hospitals of his department. Accordingly it was agreed that we would seek the services of a small committee of consultants to review both Dr. Howe's report and Dr. Tallman's objections to it."

For the reasons stated, the Committee has confined its considerations to those aspects of the Howe Report related to feeding of patients in mental hospitals in California.

IV

The Department of Finance provided each committee member, for preliminary review prior to meeting in San Francisco the following items:

1. "Report and Recommendations on Nutrition Policies, Practices and Operating Procedures of the State of California in Feeding at Residential Facilities of the Department of Corrections, Youth Authority, Department of Education, Department of Mental Hygiene, Department of Veterans' Affairs", by Paul E. Howe, Special Nutrition Consultant to the Director of Finance.

2. Copy of Interdepartmental Communication to Mr. James S. Dean, subject: Report on Nutritional Policies, Practices and Operating Procedures, from Dr. Frank F. Tallman, Director of Mental Hygiene, dated October 26, 1951, with attachments as follows:

   (a) "Food and the Mentally Ill" by Frank F. Tallman, M.D., Commissioner of Mental Hygiene, Ohio - reprint - Journal American Dietetic Association, Vol. 23, No. 1, January, 1947.

   (b) Table IV - A Comparison of Daily Per Capita Raw Food for Mental Hospital Patients. Tabulation of costs in 19 states, Fiscal Year 1949-1950, and certain Federal Hospitals compared with those in California.

   (c) Comparative Quantities of Major Food Items served in Mental Hospitals - September 1951. Tabulations of hospitals in 9 states and Veterans' Administration Hospitals - compared with Current and Proposed Ration for General Patients in California Mental Hospitals.

3. Information Pertaining to Current Food Program, Department of Mental Hygiene, California, July 1952.

   Section I - Department of Mental Hygiene Institutions.
   Section II - Current Food Control System.
   Section III - Food Rations: Current and Proposed.
      1. Daily Dietary Allowances
      2. Current Food Rations
      3. Proposed Food Rations
   Section IV - Menus, Typical Menus, 4 Institutions.
   Section V - Personnel.

4. Proposed Increased Food Rations as presented in Department of Mental Hygiene

Budget 1951-52. Department of Finance Analysis of Department of Mental Hygiene 1951-52. Budget Requests November 1, 1950. (Appendix F)

5. Comparison of Amounts of Food Provided per Person per Quarterly Ration.

6. Department of Mental Hygiene Feeding Goals, Basic Beliefs, Standards. (Official memorandum, Department of Mental Hygiene - State of California July 15, 1952)

7. Suggested Questions for Areas of Discussion. Enclosure - Letter of Robert L. Harkness to Committee Members, July 29, 1952.

8. Copy of letter from Dr. Russell M. Wilder to Dr. Howe indicating lack of evidence that neuropsychiatric patients have higher requirements for calories or other nutriments than do other persons. September 18, 1951.

9. Copy of letter from Dr. Howe to Mr. Dean, November 8, 1951, discussing Dr. Tallman's comments (item 2 above).

10. Copy of Dr. Howe's comments regarding Department of Mental Hygiene Factor F - Proposed Increased Feeding Ration Cost, August 23, 1951 (item 4).

11. Copy of Dr. Howe's letter to Mr. Harkness regarding recommendations for material and data to be supplied members of review committee (undated).

12. Excerpt from Stockton Pilot Study.

13. Dossier, Dr. Paul E. Howe.

The above material was carefully reviewed by each committee member prior to the organizational meeting in San Francisco, thus permitting a preliminary orientation to the general problem.

V

An organizational meeting was held in the State Office Building, San Francisco, at 10:00 a.m. August 4, 1952. Dr. Dwight L. Wilbur was selected chairman.

The members of the Committee decided to proceed as follows:

1. To confer personally with those persons identified with the Report and objections to it, and with those directly concerned with the budgeting for and feeding of patients in the hospitals of the Department of Mental Hygiene; namely:

   Dr. Paul E. Howe, Special Nutrition Consultant to Director of Finance
   Dr. Frank F. Tallman, Director of Mental Hygiene
   Mr. Robert L. Harkness, Chief Budget Analyst, Department of Finance
   Mr. Robert E. Conahan, Comptroller, Department of Mental Hygiene
   Miss Lavern Owens, Food Administrator, Department of Mental Hygiene
   Miss Gene Sando, Assistant Food Administrator, Department of Mental Hygiene

2. To visit two hospitals in the neighborhood of San Francisco generally agreed upon as giving representative information upon which to draw conclusions as to

the practical aspects of the adequacy of nutrition policies, food quality, quantity, preparation, and service in the Mental Hospitals of California. (See Appendix D and E)

3. On the basis of these data to deliberate and establish opinions and recommendations.

While the committee realizes that the time given to the study was necessarily limited (10 days) the members believed that adequate attention has been given to the major points and issues and that the conclusions reached are valid.

VI

The basic philosophy and beliefs of the Department of Mental Hygiene in the feeding of patients in Mental Hospitals is stated in the following "feeding goals": Department of Mental Hygiene Memorandum. July 15, 1952.

"Food, because it affects the physical and emotional well-being of every one of us is extremely important in the treatment and rehabilitation of mentally ill patients.

"Mentally ill people have a profound disturbance of the personality which drives them to lose interest in themselves and their family or community life. Food is a tremendously strong and essential factor in all of our lives. One of the ways to get sick people well is to utilize this physical and social need to eat as a therapeutic device to reawaken interest.

"Food contributes to the general health of the individual by helping develop and maintain a physically sound body and an emotionally stable personality.

"To carry out this two-fold function, food must be not merely nutritionally adequate but also well and attractively prepared and served in an atmosphere conducive to enjoyment of eating.

"In order to fully develop these therapeutic aspects of feeding, the food program of the Department of Mental Hygiene is based on the following objectives:

"1. To provide a standard of nutrition that is adequate for the treatment and rehabilitation of mentally ill patients.

"2. To provide meals that are varied, well prepared and attractively served in an environment conducive to good eating habits.

"3. To provide for special food needs through corrective diets and other special feeding procedures so vital to sick people.

"4. To obtain sufficient numbers of professional and non-professional employees to adequately staff all areas of the food department.

"5. To provide in-service training programs so personnel may further develop their skills and more fully assume the special responsibilities of mental hospital work.

"6. To secure modern, well-equipped physical plants, thereby increasing

the efficiency and standards of food preparation and service."

In an attempt to evaluate the current feeding program of the Department of Mental Hygiene in the light of its over-all program and goals, Dr. Paul E. Howe was requested to review and to make recommendations regarding nutritional policies, practices and operating procedures of the State of California in feeding its wards - including the patients in Mental Hospitals.

In his outstanding report he indicates that the "food allowances of all the agencies provide sufficient food in kind and amount for nutritionally adequate diets and acceptable meals. Improvement in its application lies more with people and what they can do with food than through major changes in food allowances." (dated September 28, 1951 - Howe Report p. 5)

However, it is the opinion of members of the Department of Mental Hygiene that the feeding goals can not be met by the current program, and that insufficient consideration has been given to the medical, psychiatric and psychological factors necessary to meet its goals. This is stated as follows:

> "Dr. Frank F. Tallman, Director of Mental Hygiene, who is responsible for the care and treatment of approximately 40,000 patients in 12 hospitals, feels that the report does not give adequate attention to the medical and psychotherapeutic functions in the hospitals of his department. Accordingly it was agreed that we would seek the services of a small committee of consultants to review both Dr. Howe's report and Dr. Tallman's objections to it." (Mr. James S. Dean's letter April 25, 1952 to committee members)

The committee has carefully reviewed the feeding goals of the Department of Mental Hygiene and believes them to be sound on a medical, psychiatric and psychological basis.

The committee recognizes in attaining these goals economic factors involving not only cost of food but additional personnel must be very carefully considered.

In considering the nutritional requirements to reach the goal, the Committee accepts as valid the recommended dietary allowances of the Food and Nutrition Board of the National Research Council* for average normal persons. It is noted that in both the authorized current ration and the proposed ration of the Department of Mental Hygiene, the allowances are equalled or exceeded in respect to calories, protein, iron, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid and that with respect to calcium the figures are only slightly less than the recommended allowances.

Furthermore, the committee is not aware of any generally accepted scientific evidence to indicate that neuropsychiatric patients as a group have higher requirements in respect to the nutrients than average normal persons.

VII

From the medical, psychiatric and psychological standpoints, in considering the feeding of patients in mental hospitals, factors beyond simple nutrition are

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*Revised 1948

desirable. From the medical standpoint, for example, such concurrent physical diseases as tuberculosis, diabetes, senility and alcoholism may significantly alter the dietary regime and requirements of these patients. It is the understanding of the committee that vitamins and certain proteins and amino acids used as concentrated therapeutic agents are purchased separately from food and have no budgetary relationship to the food appropriation. These therapeutic agents supplement and complement food and are utilized primarily where prompt and effective curative action is needed in deficiency diseases.

Special therapeutic diets will be needed for many patients. In the opinion of this committee such special therapeutic diets should be ordered on written prescription by the physician and such prescriptions should be valid for limited time periods only. In no circumstances should dietary prescriptions extend over a period of more than one month without being reordered. From the psychiatric and psychological standpoint, great importance is attached to such factors as food acceptability, environment and personnel.

Therefore, in its considerations of the feeding program of the Department of Mental Hygiene, the committee has given particular attention to these factors in relation to the food served patients and the circumstances surrounding food service.

VIII

Considerable detailed attention has been given to the food served patients in mental hospitals. The committee neither saw nor heard evidence the food was not of good quality (carcass meat was largely of commercial and utility grades).

Consideration of quantity and types of food can best be appreciated by considering foods in groups. Since the food grouping used by the Department of Mental Hygiene is satisfactory and acceptable and in current use, the committee will follow this grouping in its consideration of the components of the ration. It is realized that there are other acceptable food groupings such as those used by Dr. Howe in his report, but for practical purposes and simplification, the current food grouping of the Department of Mental Hygiene will be used.

In Table 1 is indicated the content of food in each of the food groups in the current and proposed rations expressed in pounds per patient per quarter.

The committee will consider each of these food groups in detail in relation to the recommendations of the Department of Mental Hygiene.

TABLE I

STATE OF CALIFORNIA
DEPARTMENT OF MENTAL HYGIENE

COMPARATIVE RATIONS
Expressed as pounds per quarter (91 days) for each patient

Food Groups	I Proposed Ration	Current Rations II Weighted*	III General	IV Workers	V Treatment	VI Nursery
I Leafy, Green and Yellow Vegetables	72.9	72.6	72.9	72.3	72.9	66.7
II Citrus Fruits, Tomatoes	39.3	25.7	24.6	33.7	24.6	22.6
III Potatoes	51.0	48.0	48.0	48.0	50.3	38.1
IV Other Vegetables and Fruits	54.7	61.8	58.1	73.1	74.3	36.6
V Milk Equivalents	152.1	152.3	131.9	233.9	162.1	204.6
VI Meat, Poultry, Fish	55.2	43.4	42.9	46.1	46.1	31.1
VII Eggs	11.4	8.5	8.1	11.4	8.1	8.1
VIII Dry Beans, Peas, Nuts	7.1	7.0	7.1	7.1	7.1	5.1
IX Flour, Cereals	53.5	55.8	55.8	56.3	56.3	51.4
X Fats, Oils	11.2	9.9	9.5	12.3	9.9	8.7
XI Sugar, Syrups, Preserves	16.5	16.3	16.5	16.5	16.5	10.2
XII Miscellaneous	1.8	1.4	1.4	1.4	1.4	1.8

*The weighted average for the current ration (Col.II) is derived by combining the General Ration (Col.III) and the Treatment Ration (Col.V), the Workers' Ration (Col.IV), and the Nursery Ration (Col. VI) in accordance with the number of patients in each respective classification. This permits rapid comparison between the current ration and that proposed.

*Weighting

Ration	Number of Patients
General Patient	26,668
Worker Patient	5,955
Treatment Patient	3,093
Nursery Patient	1,350
Total Patients	39,068

Group I - Leafy, Green and Yellow Vegetables

Current Weighted Ration in pounds per patient per quarter	72.6
Proposed General Ration in pounds per patient per quarter	72.9
Committee Recomendation in pounds per patient per quarter	72.9

Since there is no significant alteration recommended by the Department of Mental Hygiene, the requested ration is recommended by the Committee in order to maintain proper relationship between this group and other components in the ration.

Group II - Citrus Fruits, Tomatoes

Current Ration in pounds per patient per quarter	25.7
Proposed General Ration in pounds per patient per quarter	39.3
Committee Recommendation in pounds per patient per quarter	30.3

In the proposed food ration, the following alterations per quarter have been requested:

(1) 3 pounds fresh grapefruit
(2) 2-No. 5 cans citrus fruit juice (92 ounces)
(3) 4.7 pounds oranges

This ration would provide one service of grapefruit every other week, two 3-1/2 ounce servings of fruit juice per week and one additional orange per week. The current ration permits two oranges per week.

It is the opinion of the committee that the goals of the Department of Mental Hygiene for Group II foods, (citrus fruit and tomatoes) can be met by an allowance of 30.3 pounds of the components of this grouping by the service of citrus fruit* or canned fruit juice* every other day. It is felt that the additional requirements for ascorbic acid and the acceptability of foods containing it can be met by the use of tomatoes, tomato juice or fresh raw cabbage on alternate days.

This will permit the inclusion of citrus fruit or citrus fruit juice, tomatoes, or tomato juice or fresh cabbage daily. The recommended allowance of the committee will not only assure an offering of adequate ascorbic acid in the daily diet, but will also considerably increase food acceptability.

Group III - Potatoes

Current Ration in pounds per patient per quarter	48.0
Proposed General Ration in pounds per patient per quarter	51.0
Committee Recommendation in pounds per patient per quarter	51.0

The Committee is of the opinion that the increase in food in Group III recommended by the Department of Mental Hygiene is satisfactory provided that there is an accompanying decrease in the use of rice and/or potato substitutes.

*Orange and grapefruit.

Group IV - Other Vegetables and Fruits

Current Ration in pounds per patient per quarter	61.8
Proposed General Ration in pounds per patient per quarter	54.7
Committee Recommendation in pounds per patient per quarter	54.7

The Committee agrees with the recommendation of the Department of Mental Hygiene in order that these components may maintain proper relationships with other food groups in the proposed ration.

Group V - Milk Equivalents

(In pounds per patient per quarter)

Current Ration for patients	131.9
Current Ration for workers	162.1
Current Ration for patients and workers (weighted*)	137.49
Proposed General Ration	152.1
Committee Recommendations for General Ration (for patients and workers)	142.1

The committee notes that there is a striking increase in the amount of milk equivalents in the proposed ration as compared to the current ration. It appears to the committee that a modest addition to the current ration which will make the value 142.1 pounds of milk equivalents per patient per quarter will significantly and adequately increase acceptability of foods in this group.

Treatment and nursery rations which are to be used on medical prescription when the general ration is insufficient to meet the needs of the patients have not been included in calculating the Group V components of the general ration.

Further consideration in menu planning should be given to the use of milk or its equivalents in ice cream or baked products rather than by using larger amounts of milk as beverage.

Group VI - Meat, Poultry, Fish

Current Ration in pounds per patient per quarter	43.4
Proposed General Ration in pounds per patient per quarter	55.2
Committee Recommendation in pounds per patient per quarter	49.3

The committee agrees that the current ration is adequate nutritionally insofar as the components of Group IV are considered, but in some respects fails to meet the stated goals of the Department of Mental Hygiene. It is felt that these goals

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*weighted with figures from Table 1.
(Group V, columns 3 and 4 in accordance with number of patients in their respective classifications).

could be attained by the serving at least twice weekly of visable meat, such as pork, ham, beef, (pot roasts and roasts) and poultry (turkey and chicken). By visable meat the committee does not include fish, stew, meat loaf, and processed meats such as frankfurters, sausage, bologna, etc. It is believed that the committee's recommendation of 49.3 pounds per quarter per patient will substantially add to the ability of the culinary department to supply "visable meat" and furthermore thus increase the acceptability of the total menu.

In attaining two servings of visable meat per week, attention should be called to the fact that U.S. commercial and utility grades of meat do not lend themselves too well to dry heat preparation. To meet these requirements meat of U.S. good grade would lend itself more satisfactorily.

Group VII - Eggs

Current Ration in pounds per patient per quarter	8.5
Proposed General Ration in pounds per patient per quarter	11.4
Committee Recommendation in pounds per patient per quarter	11.4

The committee feels that the increase in the proposed ration is desirable because this will permit the use of two additional eggs a week which may be served as eggs for breakfast or improve those foods requiring eggs in preparation. This addition will greatly improve the acceptibility of the total menu.

Group VIII - Dry Beans, Peas, Nuts

Current Ration in pounds per patient per quarter	7.0
Proposed General Ration in pounds per patient per quarter	7.1
Committee Recommendation in pounds per patient per quarter	7.1

Since there is no significant change requested in this component, the committee has recommended the requested ration in order to maintain proper relationship between these foods and other components of the ration.

Group IX - Flour Cereals

Current Ration in pounds per patient per quarter	55.8
Proposed General Ration in pounds per patient per quarter	53.5
Committee Recommendation in pounds per patient per quarter	53.5

The committee concurs with the recommended reduction in this group. The committee is of the opinion that the recommended ration provides adequate supplies of carbohydrates in view of the over-all increase in other food groups recommended.

Group X - Fats, Oils

Current Ration in pounds per patient per quarter	9.9
Proposed General Ration in pounds per patient per quarter	11.2
Committee Recommendation in pounds per patient per quarter	10.5

In any increase in fats and oils, consideration must be given to the fact that fats have the advantage of increasing acceptability of food, increasing caloric intake and in some instances increasing intake of Vitamin A. They have the disadvantage of frequently causing an excessive intake of calories and may at times actually contribute to physical disease. The committee is of the opinion that the recommended increase to 10.5 pounds will improve food acceptability by permitting an increase of butter spreads to 18 (pats) of butter or substitute per week instead of the present ration of 14 pats (at 90 pats to a pound).

It is recommended in menu planning that butter or gravy be served when potatoes are served, and that when butter is not available as a spread for bread there be a substitution of jelly, jam, marmalade, peanut butter, or some other appetizing spread. This would undoubtedly increase the acceptability of the bread ration.

Group XI - Sugar, Syrups, Preserves

Current Ration in pounds per patient per quarter	16.3
Proposed General Ration in pounds per patient per quarter	16.5
Committee Recommendation in pounds per patient per quarter	16.5

It is suggested that (as noted under Group X) butter substitute spreads be included as frequently as possible when butter is omitted. The ration as recommended by the Department and concurred in by the committee will permit the use of jams, syrups, and similar foodstuffs which because of their color and taste, in small amounts, adds to food acceptability.

Group XII - Miscellaneous

Current Ration in pounds per patient per quarter	1.4
Proposed General Ration in pounds per patient per quarter	1.8
Committee Recommendation in pounds per patient per quarter	1.8

The committee concurs with the recommendations under this grouping as proper seasoning in proper amounts, and the use of suitable flavors greatly enhance food acceptability.

The figures in each food group are tabulated in Table 2 and the net nutrients of the respective rations in Table 3.

TABLE 2

COMPARATIVE RATIONS

DEPARTMENT OF MENTAL HYGIENE CURRENT RATION,
PROPOSED RATION, AND REVIEW COMMITTEE PROPOSED RATION

Expressed in pound per quarter (91 days) for each patient

Food Groups	Department of Mental Hygiene Proposed General Ration	Review Committee Proposed General Ration	Department of Mental Hygiene Current Ration Weighted Current Ration
I Leafy Green and Yellow Vegetables	72.9	72.9	72.6
II Citrus Fruits, Tomatoes	39.3	30.3	25.7
III Potatoes	51.0	51.0	48.0
IV Other Vegetables and Fruits	54.7	54.7	61.8
V Milk Equivalents	152.1	142.1*	152.3
VI Meat, Poultry, Fish	55.2	49.3	43.4
VII Eggs	11.4	11.4	8.5
VIII Dry Beans, Peas, Nuts	7.1	7.1	7.0
IX Flour, Cereals	53.5	53.5	55.8
X Fats, Oils	11.2	10.5	9.9
XI Sugars, Syrups, Preserves	16.5	16.5	16.3
XII Miscellaneous	1.8	1.8	1.4

*This figure is for the general ration for patients and workers.

TABLE 3

COMPARISON OF NET NUTRIENTS

Nutrient	Weight	National Research Council±	Department of Mental Hygiene Current Ration*	Department of Mental Hygiene Proposed Ration*	Review Committee Proposal*
Calories		3000	2856	3282	2897
Protein	gm.	70.0	91.0	98.0	93.8
Calcium	gm.	1.0	0.8	0.9	0.9
Phosphorus	gm.		1.4	1.6	1.4
Iron	mg.	12.0	14.0	14.0	14.0
Vitamin A	I.U.	5000	10069	10405	10131
Thiamine	mg.	1.2 - 1.5	1.1	1.2	1.15
Riboflavin	mg.	1.8	1.9	2.2	1.9
Niacin	mg.	12.0 - 15.0	17.0	18.0	17.0
Ascorbic Acid	mg.	75.0	92.0	106.0	98.7

gm. = gram
mg. = milligram
I.U. = International Unit

*Computed by Department of Mental Hygiene.
±Recommended daily allowances.

Goal 2

IX

"To provide meals that are varied, well prepared and attractively served in an environment conducive to good eating habits."

In attempting to meet this goal the committee is of the opinion that the recommendations made so far will definitely provide opportunities in menu planning that will produce a good variety. To further meet this goal, it is essential that food be well prepared and attractively served in an environment conducive to good eating habits. Proper preparation depends not only on provision of good food, but on adequate equipment and on adequate numbers of well-trained personnel. These latter facts will be discussed subsequently.

X

Goal 3

"To provide for special food needs through corrective diets and other special feeding procedures so vital to sick people."

The Department of Mental Hygiene has proposed a single ration and treatment patients and nursery patients will have their ration derived from the general ration as follows:

"Treatment Patients.

"Under the proposed new feeding plan, treatment patients will be served the same general base ration as all other patients. Their special food needs will be recognized by making the following amendments to the general base ration:

"Foods Added: Add two cans of fruit juice thus providing a total of four 7-ounce servings per week; add two pounds of cottage cheese, thus providing one 3-1/2-ounce serving per week; add 9.69 gallons milk per quarter, thus providing one quart daily.

"Foods Deleted: Delete aged cheese and dried beans because of their indigestability. With these supplementary foods and the general basic ration, it should be possible to fill all special diets prescribed by attending physician.

"Nursery Patients.

"Under the proposed new feeding plan, nursery patients will be served the same general base ration as all other patients. Their need for a mechanically soft diet and fewer calories will be obtained by modifying the general basic ration as follows:

"Foods Deleted: All pie fruit, coffee, tea, fresh grapefruit, pickles, mustard, aged cheese, dried beans, and dried whole fruits.

"Foods Reduced: Meat, sugar, and macaroni.

"Foods Added: 1 can fruit juice, thus providing three servings per week; 1 pound cocoa, thus providing hot chocolate once daily; two pounds cottage cheese, thus providing 3-1/2 ounces per week; 9.69 gallons milk, thus providing 1 quart daily; and replace dried whole fruit with dried fruit nuggets. The dried fruit nuggets have all pits removed and the fruits are cut into bite size pieces. It is recommended that this product be used exclusively for nursery patients since it greatly facilitates serving, actually costs no more per serving and is highly acceptable in variety, color, and flavor."

In the "Proposed Increased Food Rations" - Appendix F - for use in the treatment of patients with physical diseases and for those unable to partake of the general ration, the committee believes these recommendations to be reasonable and acceptable.

XI

Goal 4

"To obtain sufficient numbers of professional and non-professional employees to adequately staff all areas of the food department".
(The committee agrees with the stated goal)

In the limited time available, the committee could not consider staffing in all areas of the food department. Members of the committee personally observed inadequacies of staffing particularly in relation to the feeding of patients in the wards and in family style dining rooms.

It is the opinion of the committee in relation to the number and types of personnel necessary for the proper operation of food service that no definite statement can be made until completion of post-assignment studies. Such studies are recommended.

XII

Goal 5

"To provide in-service training programs so personnel may further develop their skills and more fully assume the special responsibilities of mental hospital work."

The committee concurs and urges an expansion of the "in-service training program". Any improvement in the skill of personnel will improve the standards of food preparation and service in every respect and will be economically advantageous.

XIII

Goal 6

"To secure modern well-equipped physical plants thereby increasing the efficiency and standards of food preparation and service."

The committee agrees with this goal and is greatly impressed by the progress made to date in the two hospitals visited. This was notable in regard to the development of efficient facilities in receiving, storage and preparation areas.

Cafeteria-style feeding is being widely used and further developed, and the committee feels that this trend should be extended and expedited as much and as soon as possible. This one measure alone will significantly increase acceptability of food, reduce plate wastage and serve as an effectual psychotherapeutic and economic measure.

XIV

In attaining the established goals the committee wishes to call attention to certain features in relation to the feeding of patients which have not been fully discussed previously. These include acceptability of food, food waste, and sanitation.

Food Acceptance - Significant factors relating to acceptance of food are: variety of food served, palatability, texture, color, proper temperature of foods when served, size of portion, lack of monotony, personal likes and dislikes and the opportunity to make a choice between foods.

To patients in mental hospitals one or more of these conditions may be particularly important as a psychological factor in food acceptance. Such matters as time interval between meals, physical and mental status of patients, color appeal, type and color of dishes in which the food is served, condition of eating utensils, kindliness of service, attention to detail and pleasantness of surroundings are also of importance.

It has been the observation of the committee that these factors have been given great consideration in the feeding of mental hospital patients in California, and there is encouraging progress in the further development of this program.

The committee believes the recommendations which it has made will augment various factors in food acceptance which are essential in meeting the goals of the Department of Mental Hygiene.

XV

Food Wastage fundamentally is due to a failure of food acceptance and results from the disregard of factors important to food acceptance (which have been mentioned as essential in food acceptability - see Section XIV). Particular attention should be called to the following major causes of plate wastage, namely:

(1) too large servings,
(2) lack of popularity of foods,
(3) errors in preparation, and
(4) serving food at improper temperatures.

Other factors which at times may be very important include:

(1) group dislikes,
(2) psychological disturbance of groups in wards, buildings or areas, and
(3) unplanned intermeal eating.

During its institutional visits the committee noted an unexpectedly high amount of plate wastage. In the same institution the night meal service showed a very high plate waste; the next morning meal had a very low plate waste. The committee was informed that an intermeal serving of food had been given prior to the evening meal in which the wastage was extreme.

It is the hope of the committee that its recommendations regarding rations, food preparation, and service will significantly decrease plate wastage. It is urged by the committee that studies on plate waste be made to determine the effects of these recommendations.

In several instances during the current hospital visits it was observed that portions of food served were excessive. These observations confirm the opinion of the committee that much food could be saved and utilized by expediting the department's program of development of standard portion serving utensils and equipment and the in-service training of personnel.

XVI

Sanitation - So far as observed the sanitation of the food preparation areas and of serving areas was excellent. It is believed that continued attention should be extended to the problems of refrigeration, garbage disposal, insect control and the examination of food handlers, including patients and employees.

XVII

Economic Aspects

The committee is well aware of the economic aspects of a program which involves the feeding of approximately 40,000 patients in mental hospitals. Information supplied to the committee indicates that the book values for food approximate $9,500,000 annually for patients in mental hospitals and that the approximate cost of personnel for this purpose is in the neighborhood of $1,500,000.

The estimated current daily cost of food in the general patients ration in mental hospitals is approximately $0.62 for each patient and in the proposed ration would be increased by $0.195 to approximately $0.815.

To attain all the goals of the feeding program for the general patient ration of the Department of Mental Hygiene it has been estimated that the book value for the food increase would approximate $2,355,000* and that 500 additional employees would be required. This would entail for personnel and additional expense in the neighborhood of $1,500,000 a year.

It is the understanding of the committee that this additional number of employees are proposed to be utilized entirely as personnel in the culinary department to insure more adequate and efficient supervision of the preparation and service of food. It is our further understanding that in certain assignments, patient labor will be replaced by proposed paid personnel.

*After reduction by $495,000 for substitution of Oleomargerine for butter in original proposal.

The total additional cost, then, of meeting the feeding goals of the Department of Mental Hygiene for the patients and personnel on general ration would be approximately $3,855,000 a year. The committee, therefore, does not lightly undertake recommendations for increases in the food ration, for increases in personnel and for further studies and research in those fields and methods which would lead to more effective and economical feeding of patients in mental hospitals.

Because of lack of estimates of the book value of foods, the committee is unable to state the approximate cost of their recommendations in increases in food which it had made. They are distinctly less however than would be required in acceptance of the ration proposed by the Department of Mental Hygiene.

The committee is making no specific recommendations regarding the number of additional personnel needed to carry out its proposed program.

The committee feels that the acceptance of the recommendations made rests with the willingness of the citizens of the State of California to support a feeding program which, because of its higher degree of acceptability has certain advantages psychotherapeutically when compared to the present ration of lesser acceptability which is nutritionally adequate.

XVIII

Personnel

Personal observations of the committee indicate that many of those responsible for the feeding program of the Department of Mental Hygiene, both at the departmental and institutional level are able, conscientious and doing an outstanding job.

It is our opinion that the greatest need for trained personnel is at the institutional level and as indicated in the "Howe Report", is for food administrators supervisory cooks and dining room supervisors. These three key posts must be filled by well-trained, efficient persons in order for the feeding program to be economically operated and to insure that patients receive full therapeutic and nutritional value from food service.

The factor of efficient personnel is almost as important as food in the overall feeding of mental patients, and there is little advantage in accepting the committee's recommendations to increase the ration, if at the same time, the personnel that handles the ration is inadequately trained or inefficient.

XIX

Methods Which Will Aid in the Further Development of the Feeding Program

The committee is deeply impressed by the recommendations of Dr. Howe concerning the need for the further development of the feeding program of patients in mental hospitals and the committee strongly urges that a number of these needs be met.

Progress depends on further improvement by the Department of Mental Hygiene, not only of the skillful use of an adequate ration, the further training of its personnel and the continued development of adequate physical facilities but upon continued improvement in all of them.

Such improvement depends in considerable part on further study and development.

Further Development

In all aspects of the feeding program, continued development can be achieved by "in-service" training programs, interdepartmental conferences of key persons, study of new methods of use of new equipment, preparation and service of food.

Demonstration Kitchen

The establishment of a demonstration kitchen at one of the mental hospitals in the state for purposes of extending "in-service" training and "refresher courses" for those already trained and for experimental or testing purposes is sound economically.

Teaching Aids

The great value of manuals, audio-visual teaching aids and a departmental bulletin dealing with all phases of hospital food service cannot be over emphasized and need to be stimulated and developed.

XX

Review Committee

It is extremely important periodically to review not only goals that are set but methods which are used to obtain them. It is essential, therefore, that all those in a supervisory capacity in the feeding program of the Department, at regular intervals, review and evaluate all phases of the activities under their direction.

Programs involving the feeding of large institutional populations naturally move slowly and are constantly changing. Several years may be required properly to develop alterations in such a program. The eventual results of alterations in a feeding program are unknown and should be measured and the advantages and disadvantages of them from every standpoint be determined. Therefore, the committee is of the opinion that all aspects of the feeding program of patients in mental hospitals of California should be re-reviewed in the light of the present recommendations at the end of three years by persons outside of the Department of Mental Hygiene.

If the recommendations of the Committee are implemented, immediate steps should be taken to establish valid techniques in the various hospitals for the adequate evaluation of the beneficial effects which may be expected from the adoption of the recommendations of the Committee. Effects of the increased diet on the nutritional status and weight of patients; benefits in their medical, psychiatric and psychological condition which may properly be attributed to the improved diet should be carefully investigated.

All patients should be weighed and these weights compared with insurance actuarial averages of the general population by age and height.

Careful pre-preparation waste, cooking losses and plate waste studies should be made.

Such data would then be available for use by members of the Department of Mental Hygiene and serve as a useful guide for the consideration of a Review Committee.

SUMMARY AND CONCLUSIONS

1. The committee enthusiastically approves the feeding goals established by the Department of Mental Hygiene for feeding patients in mental hospitals in California. From observation it is the committee's opinion that the Department of Mental Hygiene is doing an excellent job of feeding its mentally ill patients.

2. It is the opinion of the committee that Dr. Howe's contention that existing rations are sufficient for nutritionally adequate diets is sustained.

3. Dr. Howe's contention that improvement in the quality of meals could be accomplished by augmenting culinary personnel and giving greater attention to their training is sustained. However, it is the opinion of the committee that the degree of such improvement would not be adequate to meet the medical, psychiatric and psychological aspects of the goals of the Department of Mental Hygiene in a reasonable period of time.

4. In order to meet the medical, psychiatric and psychological needs of the patients, the committee recommends certain increases in amounts of food in groups over those used in the current ration of the Department of Mental Hygiene. The recommendations of the committee are tabulated and compared with the current and proposed rations of the Department in Table II.

5. The Committee further strongly recommends continuation and expansion of the training program of personnel, particularly for those in key positions in institutions, namely: Food Administrators, Supervising Cooks and Dining Room Supervisors.

6. The committee cannot too strongly urge continuance of development of the feeding program by the establishment of a demonstration kitchen, by proper use of teaching aids and by continued emphasis on research in all phases of Food Administration.

7. The committee is of the opinion that in view of its present recommendations, all aspects of the feeding program of patients in the mental hospitals in California should be re-reviewed at the end of three years by persons outside of the Department of Mental Hygiene.

8. The committee recognizes that the acceptance of the recommendations it has made rests with the willingness of the citizens of the State of California to financially support a feeding program which is more costly than the current one. The advantages of approving these recommendations lie in the greater anticipated acceptance of a feeding program with the medical, psychiatric and psychological advantages which serve as an aid to rehabilitation as compared to the current program of a ration of lesser degree of acceptance which is nutritionally adequate.

/s/ DWIGHT L. WILBUR
Dwight L. Wilbur, Chairman

/s/ MARY ZAHASKY
Mary Zahasky, Member

/s/ FRANCIS H. SLEEPER
Francis H. Sleeper, Member

APPENDIX A

OUTLINE OF EDUCATION, TRAINING, EXPERIENCE AND CONTRIBUTIONS

Name: MRS. MARY C. ZAHASKY

Address: Director, Dietary Department, University of Oklahoma Hospital, Oklahoma City, Oklahoma

Birth: Worcester, Massachusetts, 1917

Education, Training, and Experience: Framingham Teachers College, Framingham, Massachusetts. B.S. 1938

Home Economics Department, Worcester City and County School System, Foods and Nutrition. Graduate work 1938-39.

Dietetic Interneship, Queen's General Hospital, Jamaica, Long Island. 1939-40.

Columbia University, New York City. Graduate work 1941-43.

New York University, New York City. Graduate work 1941-43.

St. Vincent's Hospital, 11th Street, New York City. Therapeutic dietitian.

Army of the United States (1st Lieutenant) specializing in dietetics. 1943-46.

Memorial Hospital, Worcester, Massachusetts, administrative dietitian. 1946-47.

University of Oklahoma Hospital, Assistant Director, Dietary Department. 1947-48.

University of Oklahoma Hospital, Director of Dietetics. 1948.

University of Oklahoma Medical School, Associate Professor Nutrition. 1951.

Membership: Member of the Joint Committee, American Dietetics Association, American Psychiatric Association, "Psychiatric Hospital Standards and Policies" for Dietary Departments in Mental Hospitals. 1950-52.

APPENDIX B

OUTLINE OF EDUCATION, TRAINING, EXPERIENCE AND CONTRIBUTIONS

Name: FRANCIS H. SLEEPER, M.D.

Address: Augusta State Hospital, Augusta, Maine.

Birth: Houlton, Maine. 1900.

Education, Training, and Experience:

Premedical

Bowdoin College, Brunswick, Maine. 1918-1920.

Medical

Bowdoin, Harvard, Boston University, M.D. 1924.

Clinical

Massachusetts Memorial Hospital, Boston, Teaching Hospital - Boston University School of Medicine.
Rotating Internship 1924-1925.
Resident Physician 1925-1926.

Worcester State Hospital (Massachusetts).
Senior Physician, Chief of Medical and Surgical Services 1926-27.
Acting Director, Clinical Psychiatry 1927-28.
Acting Assistant Superintendent 1928-29.
Assistant Superintendent and Resident Director of Research 1929-31.
Resident Director of Research 1931-38.
Assistant Superintendent 1935-38.

Masschusetts Department of Mental Health.
Director of Hospital Inspection 1938-40.
First Assistant Commissioner 1940-46.

Maine Department of Institutional Services.
Superintendent, Augusta, Maine, State Hospital, 1946-
Consultant to Commissioner on Hospitals

National Faculty 1942-45.

Instructor, neuropsychiatry; U.S. Army 1st Service Command
U.S. Navy 1st Naval District.

APPENDIX B

Honors, Societies, and Memberships:

American Medical Association.
American Psychiatric Association. Past Chairman, Committee on Psychiatric Nursing, 1948-50.
Committee on History of Psychiatry, 1950-53; Nominating Committee 1952.
Maine Psychiatric Society, President 1952.
Maine Medical Society, Kennebec County Medical Society; President 1952.
New England Psychiatric Society, Past President 1948.
Massachusetts Psychiatric Society, Past Councillor.
Massachusetts Medical Society.
Diplomate, American Board of Psychiatry and Neurology.

Writings:

Twenty or more original articles on research in dementia praecox, administration of hospitals, nursing, feeding of patients.

APPENDIX C

OUTLINE OF EDUCATION, TRAINING, EXPERIENCE AND CONTRIBUTIONS

Name: DWIGHT L. WILBUR, M.D.

Address: 655 Sutter Street, San Francisco 2, California

Birth: Harrow-on-the-Hill, England. 1903.

Education:
Palo Alto Union High School, Palo Alto, California. 1920.
Stanford University. A.B. in Zoology with distinction. 1923.
University of Pennsylvania. M.D. with honors. 1926.
University of Minnesota. M.S. in Medicine. 1933.

Training:
Resident Physician, Hospital of the University of Pennsylvania, Philadelphia, Penna. 1926-1928.
Fellow in Medicine, Mayo Foundation, Rochester, Minn. 1929-1931.
First Assistant, Section on Pathologic Anatomy, Mayo Clinic, Rochester, Minn. October 1929 to April 1930.
First Assistant in Section, Division of Medicine, Mayo Clinic, Rochester, Minn. 1931-1933.
Associate in Section, Division of Medicine, Mayo Clinic, Rochester, Minn. 1933-1937.

Experience:
Consulting Physician, Mayo Clinic, Rochester, Minn. 1931-1937.
Instructor and Assistant Professor of Medicine, Mayo Foundation Graduate School, University of Minnesota. 1933-1937.
Assistant Clinical Professor of Medicine, 1937-1940, Associate Clinical Professor of Medicine, 1940-1949 and Clinical Professor of Medicine 1949 to date, Stanford University School of Medicine, San Francisco.
Associate Clinical Professor of Medicine, College of Physicians and Surgeons, A School of Dentistry, San Francisco, 1948-1951.
Chief of the Medical Service, French Hospital, San Francisco. 1946 to present.
Member of Staff, Stanford, Children's and Notre Dame Hospitals, San Francisco.
Assistant Visiting Physician, San Francisco Hospital (Stanford Service). 1937 to present.
Consulting Physician, Southern Pacific Hospital. 1949 to present.
Editor, California Medicine, official journal of the California Medical Association, 1946 to present.
Associate Editor, Gastroenterology, 1950 to present; Modern Medicine, 1950 to present.
Medical Advisory Board, Post Graduate Medicine. 1951 to present.
Member, Board of Directors, San Francisco Medical Society. 1946-1951.
Member, Board of Directors, YMCA of San Francisco, 1941-1947.
Member, Board of Directors, Hospital Service of California. 1946-1951.
Member, Board of Directors, San Francisco Tuberculosis Association, 1948 to present.
Lt. Commander and Commander, Medical Corps, U.S. Naval Reserve on active duty 1942-1946. Assistant Chief and Chief of Medical Service, U.S. Naval Hospital, Oakland, Calif. 1944-1946.

Branch Section Chief in Internal Medicine and Gastroenterology (Branch 12, Veterans Administration) 1946-1949. Area Section Chief 1949 to present.
Expert Consultant, Department of the Army, Letterman Army Hospital, San Francisco, 1946 to present.
Trustee, Lux College, 1949 to present.
Board of Members, Mayo Association, Rochester, Minn. 1951 to present.

Honors and Societies:

Phi Beta Kappa, Stanford University, 1923.
Alpha Omega Alpha, University of Pennsylvania, 1926.
Sigma Xi, University of Minnesota, 1930.
Frederick A. Packard Prize in Clinical Medicine, University of Pennsylvania, 1926.
Fellow American College of Physicians (Governor for Northern California, 1947-1951. Regent 1951.)
Fellow American Association for Advancement of Science.
Diplomate of National Board of Medical Examiners.
Diplomate of American Board of Internal Medicine (Gastroentology).

Memberships:

San Francisco Medical Society, 1937 to present.
California Medical Association (Member of Council 1946 to present).
American Medical Association (Secretary of Section on Experimental Medicine and Therapeutics 1942-1947; Vice-Chairman and Chairman 1947-1949; Member of House of Delegates from California, 1942-1945 and 1951 to present).
American Gastroenterological Association (Secretary 1947-1952. Second Vice-President 1952).
Central Society for Clinical Research (Emeritus Member).
American Society for Clinical Investigation (Member of the Council, 1942-1945).
California Academy of Science.
California Academy of Medicine.
Association of American Physicians, 1950.
Health Council, Community Chest of San Francisco, 1941-1942. Vice-Chairman and Chairman, Guidance Council 1942.
Subcommittee on Medical Nutrition, National Research Council, 1941-1942.
American Gastroscopic Society.
American Diabetes Association.
California Society of Internal Medicine.
San Francisco Society of Internal Medicine (Secretary-Treasurer 1946-1952).
Alumni Association, Mayo Foundation.
California Nutrition Council, 1941-1942.
San Francisco Nutritional Council (Chairman 1941-1942).

Writings:

Author of approximately 100 scientific articles on kidney, gastrointestinal tract and nutrition.

APPENDIX D

COMMITTEE VISIT TO
STOCKTON STATE HOSPITAL

West Area

The Stockton State Hospital was visited by all members of the committee on August 5, 1952, to observe the noon day meal while it was being served.

The hospital has approximately 4500 patients of which 1400 are in a detached colony. The type of construction is block type and separate cottage plan with a centralized kitchen.

Kitchens: A centralized kitchen with decentralized food service is used. The kitchen is well planned, efficient, with excellent to good equipment. The meat shops, bakeries, refrigeration and storage facilities are good. The floors in the bakery are in need of renovation. The meat cutting room has modern equipment. The vegetable preparation room has only fair equipment and physical area. Although the kitchen equipment is not completely new it appears efficient and adequate. Food is transported in stock kettles by truck to the various outlying buildings. It was noted that the food so transported was hot and retained its heat in the stock kettles throughout service.

Type of food service: Observation was made of the noon day service for the infirmary type of patients and for parole working patients. The cafeteria service seen under operation was excellently conducted. While patients did not have a choice of food, they handled their self-service very well. It was obvious that the patients were well trained and that the supervision of the service of the meal was excellent. In the cafeteria service it was noted that modern electrically heated food carts were available but they were not being used because of lack of electrical connections. The service in the cafeteria was very attractive. Multi-colored plastic dishes were in use and a complete set of eating utensils was provided. The speed of the service in the cafeteria was excellent, the quality of service good. The food was served sufficiently rapidly so that hot foods remained hot and the cold foods cold. In the cafeteria the quantity of food was adequate. The meal would be considered to be of good acceptability. In the cafeteria service some patients commented on the fact that the ice cream serving was 1/2 an ounce less than they had been accustomed to (3-1/2 instead of 4 ounces), showing the high degree of acceptability of this item. The plate waste in the cafeteria was not considered to be excessive.

The technique followed in caring for the bed patients and the ambulatory or chair type of convalescent was standard: the food was distributed by psychiatric aides to patients who in turn served other patients. In this particular installation there was adequate supervision on the part of obviously well-trained, thoroughly interested ward employees, and the patients seemed well selected to take care of the feeding of the other sick patients under employee supervision. The service was as expeditious as can be carried out with this type of patient. The patients all gave the impression of being well nourished as far as weight can be discerned from casual observation.

In addition to observing service in the cafeteria, a family style service to an elderly group of men was observed. The menue for Tuesday, August 5, 1952, is part of this appendix.

The meal was to have consisted of cream of pea soup, salmon loaf, steamed potatoes, vegetable, ice cream, bread and peanut butter. In the cafeteria these foods were all served except peanut butter for which no substitution was made. In certain other sections the cream of pea soup was not served. The vegetable was Swiss chard. It was considered that (in certain parts of the hospital) the plate waste was excessive; foods were wasted in the following order: (1) Swiss chard (2) steamed potatoes in jackets. (In this regard it was noted that no gravy or oleomargarine was served.) (3) Whole wheat bread (No oleomargine was served.) (4) A relatively small amount of salmon loaf was rejected. Two slices of bread were served to each patient. The meal was considered to have a fair degree of acceptability for parole workers although the quantity of bread served was definitely excessive. Bread without spread and potatoes in jacketswithout gravy or butter spread may account for some of the rejection of these items.

The above comments have reference particularly to family style service of which was observed in parts of the hospital only. In the particular ward observed, two settings were made and the tables had to be cleared between servings.

The cooperation between employees in this hospital appeared good and the cooperation between the central supervisory authorities and the institutional officials appeared good.

In the food preparation room it was noted that one supervisor was supervising approximately 25 patients.

Mrs. Ora L. Whitney is the Food Administrator I. She made comments on food preferences and made certain verbal recommendations. These were that more meat, eggs and fresh fruit be allowed. She stated that the patients liked sliced ham, which had been served twice in the preceding quarter (13 weeks). She commented that canned fruit is liked better than stewed fruit, that it would be desirable to give the patients more cheese, macaroni and the above-mentioned foods, and that orange juice is served only to bed patients twice weekly.

Interviews were held by the members of the committee with Dr. Thomas W. Hagerty, the superintendent, Dr. Freeman H. Adams, clinical director, and Mr. Lester L. Clark, business manager.

Dr. Adams stated that on arrival many patients were underweight. This observation applied particularly to those in the aged group and to acute alcoholics, and in these patients clinical signs of vitamin deficiencies or malnutrition were not infrequent. He stated that following a period of hospitalization acute alcoholics and elderly people tended to improve rapidly and that most patients gained weight. When questioned about evidence of deficiency diseases, he stated that he had no clear-cut evidence of deficiency diseases except for vitamin deficiency in the acute alcoholics.

Many patients on admission appeared to have anemia. It was found that in a routine investigation of about 300 patients considered potential blood donors, all of whom were under the age of 59 and who had been in the hospital over three years, approximately one-third had hemoglobin values under 80% and/or erythrocyte counts under 4 million. It had not been ascertained if the incidence of anemia was high or low.

Dr. Adams noted that some senile patients were underweight and while he thought

that they might have deficiency diseases he had no specific evidence on this point.

He stated that the dietary care of the patients with physical diseases at the hospital was rather makeshift and that quantitative diets were not used. Tube feeding had become unusual since the advent of shock treatment. Dr. Adams stated that he did not get too close to the food service. His own opinion of the acceptability of the diet and the patient's reactions were that most of the patients whom he saw were of the vociferous type who tended to complain. In his own opinion the patients perferred hot dogs, salads and fruits, particularly seasonal fruits, and sandwiches and meat that they could get their teeth into. The "back ward" psychiatric patients "will eat anything". Patients do not like spinach, fish and "slop" stews. He considers food an important treatment device.

Dr. Adams reported that there were 25 diabetics in the hospital; of these four were severe diabetics and the remaining 21 ambulatory. Dr. Adams stated that some of the diabetics were mild and did not require special dietary treatment. Furthermore, 200 segregated cases of pulmonary tuberculosis were in the hospital. All patients had annual chest X-rays and in the case of active or suspected tuberculosis patients are X-rayed every three months. Regular hospital diets, supplemented on occasion, were used for patients with tuberculosis. Most patients with tuberculosis receive the regular treatment diet. It was stated that the hospital was using about 2,000 worth of vitamin supplements per year. The bulk of them were used in the treatment of alcoholics. In some instances the use of vitamin concentrates was continued over a long period of time.

East Area (Ranch)

The ranch is located about 2-1/2 miles from the main group of hospital buildings. It was noted by the committee that supper preparation was completed at 2:45 p.m. Corn on the cob which had already been completely cooked, was being counted and placed in pots of hot water to be served to the patients for the evening meal. There was evidence that Spanish Rice had been prepared much earlier in the day. Fifty pounds of meat was used in the recipe for Spanish rice for 1,400 patients. Meat is not routinely weighed in the kitchen and the weight stated by the butcher is accepted by the chef. There was only one cook available at the ranch during the evening meal.

Food preparation equipment and storage was good. Sanitary conditions were noted to be good, but maintenance of the floor was not up to standard.

Patients in both parts of the hospital appeared well nourished. There appeared to be no gross evidence of malnourishment or deficiency diseases. The raw food material seen in the vegetable preparation room by institution standards appeared to be of good quality.

APPENDIX D

DEPARTMENT OF MENTAL HYGIENE
MENU FOR PATIENTS
STOCKTON STATE HOSPITAL

Tuesday, August 5

Stewed Spice Peaches
Farina
Honey
Bread, Margarine
Coffee, Milk
Carmel Buns, W.P.,* T.B.*

Cream of Pea Soup
Salmon Loaf
Steamed Potatoes
Vegetables
Ice Cream
Bread, Peanut butter

Rice, ground meat
Salad
Chocolate cookies
Canned apricots
Bread, Margarine
Tea

* Working patients
Tuberculosis patients

APPENDIX E

COMMITTEE VISIT TO
NAPA STATE HOSPITAL

The Napa State Hospital was visited by two members of the committee for the evening meal service on August 6, 1952, and by all members of the committee for the breakfast service on August 7, 1952. Napa State Hospital is a cottage-plan type of institution with a central kitchen and decentralized service. The kitchens are outstanding, excellently planned for a total population of 6000 or 7000 patients. The present total patient population is 4500.

Food distribution is by truck, stock kettles and electric food carts. All types of service, including family style, cafeteria, and combinations of these, as well as tray service for physically ill patients were being used.

Evening meal. The multi-colored plastic dishes were attractive. There were electrically heated food carts available. There appeared to be an inadequate number of helpers in the dining room. There were a total of eight barrels of food waste for the noon and night meal for the 500 ambulatory and bedridden senile patients in this building. The food served did not match the menu as substitutions had been offered because of an error in ordering. The meal as served consisted of boiled beans, diced beets, a green salad (lettuce) with French dressing, whole wheat bread with oleomargarine, ice cream, and a cup of milk. The above foods were substituted for those appearing on the menu; namely, creamed celery soup (some patients received this), Spanish rice, buttered zucchini, cottage cheese, cabbage slaw, and chocolate pudding.

In the particular section under observation, this meal was served family style. It appeared to the committee that the servings were too large, that the menu acceptability was low, and that the plate wastage was very excessive. It was learned later that some of these patients had had egg nogs in the middle of the afternoon, and other patients had cheese and crackers as part of refreshments for a ward party. The items rejected were beans, beets, and salad, in that order. Sugar for self service was plentiful on each table.

On Wednesday, August 6, the hospital was visited by the entire committee. Breakfast consisted of a large helping of apple nuggets, milk, boiled rice, two slices of white bread, oleomargarine and one boiled egg (working patients had two eggs). Coffee was served, 8 ounces to a patient, in bowls with a very small amount of milk, enough to only slightly change the color of the coffee. The coffee bowls were badly stained. Sugar was available on all tables and could be taken at will by patients. A tablespoonful of sugar was placed in the milk into which was placed the boiled rice for each patient. Food was set out on the table at least 20 to 30 minutes prior to the patients being seated. Three employees who supervised this dining room (feeding 500 moderately disturbed women patients) were aided by 38 women patients and 8 men patients. The tables had to be cleared and 300 additional patients served at a second sitting. The supervision of this meal was considered inadequate. A 20 minute wait was required between the servings and the food in all instances became cold. It should be noted that cafeteria counters have already been delivered and this particular type of service will be discontinued in favor of the cafeteria type of service in the immediate future.

A visit was made to bed patients in one ward. The service, which was not well organized, was very slow owing to inadequate numbers of personnel. The food acceptability of the breakfast in spite of the slow service and thermal difficulties was considered good.

The kitchen bakery, food preparation rooms, and meat cutting rooms were all exceptionally good.

In the opinion of the committee the chief difficulty in the personnel organization at this institution is inadequacy of supervision and inadequate numbers of personnel.

The committee has a very definite impression that more trained supervision of food service is needed in this institution.

Interviews were held with Dr. Theo K. Miller, Superintendent; Dr. W. A. Oliver, Clinical Director; and Mr. Delbert Bradley, Business Administrator. In interviewing Dr. Miller and Dr. Oliver regarding the clinical conditions of the patients, the statement was made that many of the patients were underweight on arrival but that all tended to gain weight. Dr. Oliver had no clear-cut, defnite evidence of deficiency diseases in the patients and had no information regarding the instance of anemia. The impression of Dr. Miller and Dr. Oliver was that the patients were accepting the food and that the patients were not underweight. There was a large population of patients with pulmonary tuberculosis in this hospital which is a collection point for such cases from the other mental hospitals. These patients receive the treatment ration.

APPENDIX F

DEPARTMENT OF FINANCE ANALYSIS OF
DEPARTMENT OF MENTAL HYGIENE 1951-52 BUDGET REQUESTS

PROPOSED INCREASED FOOD RATIONS -- (FACTOR F)
AS PRESENTED IN DEPARTMENT OF MENTAL HYGIENE BUDGET
1951-52

The food control, which was last revised in 1948, has been thoroughly reviewed to determine how effectively it is meeting the needs of patients in the state mental hospitals. Our ultimate goal in institution feeding is to establish a moderate cost, nutritionally adequate diet that has a high degree of acceptability to the patient. Although the 1948 revisions made substantial improvements in the nutritive content of the diet, alterations in the quality and quantity of certain foods need to be made before the desired standards in patient feeding can be obtained.

The proposed revision in the food control has been discussed with nutrition authorities in the State and has received their approval on a scientific basis. This ration provides the recommended allowances of the National Research Council and follows the general pattern of a moderate cost diet as outlined by the U.S. Department of Agriculture.

Based on July, 1952, wholesale food prices, the proposed ration for general patients costs approximately 81.5 cents per day as compared to 62 cents for the present ration. Although this proposed ration is more expensive monetarily than the current food ration, it is not excessive in any food item, and when converted to 1949 retail figures, costs slightly less than the "wage earner" food allowances for an active woman based on the 1949 Heller Committee report.

In the present food control, separate rations are provided for general, working, treatment and nursery patients. It is proposed that these four rations be discontinued and that they be replaced by one general ration which will be used for all patients. The special food needs of nursery and treatment patients will be met by making specific amendments in the quality and quantity of certain foods in the general ration. In this way, patients and employees will have a comparable ration and one dietary standard can be established for the entire population. By so doing, the present problem in classifying and segregating patients according to their ration will be eliminated and the administration of food in the kitchen and on the wards will be greatly facilitated.

Several changes are being proposed in the content of the ration. These changes are based on actual food experiences in the hospitals and are being made for the following reasons:

1. Varied and more palatable menus are needed in the hospitals so the meals can be made more acceptable to a higher percentage of the patients.

2. On the present ration, the quantities of certain food items are inadequate for good meal preparation.

3. The therapeutic value of food can be greatly increased by serving patients the kinds and quantities of foods to which they were accustomed before becoming hospitalized.

4. Certain revisions in the nutritive content of the diet are needed in the interest of providing good nutrition for all patients.

FOOD ACCEPTANCE

In revising the present control, a special attempt was made to increase its acceptability as far as color, flavor, texture, and variety are concerned. Although it is practically impossible to cater to individual food preferences in quantity cookery, it is possible to include certain foods or groups of foods in the ration that will provide an acceptable menu to a high percentage of the patients. Observations at the Stockton State Hospital Pilot Study show plate waste can be reduced approximately one-half by serving a varied, colorful menu. This same study shows that table manners and social conduct at the table have improved as food becomes more acceptable, and plate waste decreases. Further observations indicate that citrus fruit is the most acceptable form of Vitamin C, that whole fresh eggs are popular and that a full serving of meat has great satiety value.

FOOD QUANTITIES

Although all major food items are included in the present ration, the quantities of several foods are inadequate for good meal preparation. For example, under good management, it is now possible to provide each patient with 2 ounces of roast meat per week, a serving too small and too infrequent to satisfy the average person. Several hospital kitchens report that certain ingredients, particularly eggs, are inadequate for good quality cooking.

FOOD AS THERAPY

Food is very important to a mentally-ill person for emotional as well as physical reasons. Therefore, if food is to be of greatest therapeutic value, patients should be served the kind of food to which they were accustomed in their own economic levels at home.

With the proposed revisions in the food control, substantial improvements can be made in the quality of the hospital menu.

NUTRITIVE CONTENT

Nutritional Composition of Rations:

The possibility that diet may be of benefit to patients having mental illness is becoming more apparent and several connections between mental illness and nutrition are now known. It is common knowledge that many patients have perverted appetites. Some may refuse food entirely, while others eat excessively. On the other hand, certain vitamin deficiencies such as thiamin, niacin, and pyridoxine, may produce definite mental and nervous changes. Nutrition authorities recommend that diets for the mentally-ill contain generous amounts of protective foods and that the mineral and vitamin content be somewhat higher than the requirement for the normal healthy person. On the following table, the nutritional content of the present and revised rations is compared with the recommended dietary allowances of the National Research Council. It should be pointed out that National Research Council

APPENDIX F

Standards are for a normal healthy adult and do not take into consideration the special nutrition needs of a mentally-ill patient. (See paragraph below on Calorie requirements.)

Comparison of Net Nutrients*

Nutrient	N.R.C.	Authorized Current Control	Proposed Control
Calories	3000	2856	3282
Protein	70 gms	91 gms	98 gms.
Calcium	1.0 gms.	.8 gms.	.9 gms.
Iron	12 mg.	14 mg.	14 mg.
Vitamin A	5000 I.U.	10069 I.U.	10405 I.U.
Thiamine	1.2 mg.-1.5 mg.	1.1 mg.	1.2 mg.
Riboflavin	1.8 mg.	1.9 mg.	2.2 mg.
Niacin	12 mg. -15 mg.	17 mg.	18 mg.
Ascorbic Acid	75 mg.	92 mg.	106 mg.
Phosphorous		1.4 gms.	1.6 gms.

Distribution of Calories*

	Recommended Standard for Moderate Cost Diet	Current Control	Revised Control
Protein	10% to 15%	12%	12%
Fat	30% to 40%	32%	33%
Carbohydrate	50% to 60%	56%	55%

All calculations were made from U.S. Department of Agriculture Handbook No. 8. The above figures are based on the nutrients in raw food. Cooking and preparation losses will reduce these figures approximately 10% for minerals, 25% for Vitamin A, Thiamin, Riboflavin, and Niacin, and 45% for Ascorbic Acid (Vitamin C).

Caloric Requirements

In considering the energy requirements of the mentally-ill, it should be pointed out that physical activity alone cannot be the sole criteria for determining caloric needs. Recent studies indicate strong emotions accelerate the basal metabolic rate and work done by S.A. Portis (J.Am.Med.Assoc.142, 1281 (1950) has re-emphasized another application of diet therapy in psychoneurotic patients by showing abnormal carbohydrate metabolism in a well-defined group of such patients. Evidence has been offered by Meduna (Arch.Neural. & Psychiat. 47:38, 1942) and his associates to show that schizophrenia is, in certain instances, at least, related to carbohydrate metabolism. These investigators tell of the presence of an "anti-insulin" factor in the blood of schizophrenics which acts antagonistically to normal carbohydrate metabolism. Although no definite recommendations are made regarding dietary treatment, it is evident that certain adjustments in calories as well as other nutrients would quite likely be required.

In the present food control, the primary purpose of having separate rations for general and working patients is to provide additional calories for the working patient.

*Revised February 1952.

The recent trend in the hospitals to decrease the activity of the working patient and increase the activity of the general patients through occupational and recreational therapy, brings the physical activity of these two groups to a comparable level. The proposed general ration will provide approximately 3500 calories. This is adequate for the physical activity of this group and allows a small safety margin for possible metabolic disturbances that research workers are now finding associated with mental illness.

Protein Requirements:

Doctors in several state hospitals have recently reported low hemoglobins and related blood disturbances that can be caused by poor quality of protein in the diet. In the revised ration, a higher percentage of animal protein (high quality) and a lower percentage of vegetable protein (low quality) have been introduced. Nutrition authorities recommend 2/3 animal protein and 1/3 vegetable protein for good dietary standards. The following table compares the type of protein in the two rations:

	Current Ration	Proposed Ration
Animal Protein	53%	61%
Vegetable Protein	46%	39%

RECOMMENDED CHANGES IN FOOD CONTROL

Citrus Fruit:

Vitamin C is one of the nutrients most quickly lost in large scale cooking. In order to supplement this loss and add variety to the menu, it is proposed that 3# fresh grapefruit, two #5 cans (92 oz.) of fruit juice and 4.7 lbs. of oranges be added to the quarterly ration. This revised ration will provide one serving of grapefruit every other week, one 7 oz. serving of fruit juice per week and one orange per week. These items will supplement the present citrus ration of two oranges per week. Nutrition authorities recommend one serving of tomato or citrus fruit per day.

Fruit and Desserts:

Starch puddings (cornstarch, rice bread, etc.) have been used excessively for dessert in many institutions. In order to reduce this excessive starch intake and add variety to the menu, the canned fruit ration was increased from 2.08 #10 cans to 2.47 cans, an addition of 7 servings per quarter. With this supplement it will be possible to have four servings of canned fruit each week, three for dessert and one for breakfast. It is further recommended that the ice cream ration be increased from .175 gallons to .252 gallons (5 additional servings), and that flavored gelatin be increased from .12 pounds to .416 pounds (7 additional servings per quarter).

Meat:

General patients now receive three pounds of meat per week. In the proposed revision, this will be increased one pound per week. This is carcass weight and will yield about 60% edible portion (2.4 lbs. edible meat per week). One fault in our present meat ration is that full servings of meat are too small and too infrequent. With the recommended increase of one pound per week, it will be possible

to have a full serving of meat at least once a week and increase other varieties as follows: bacon once a week, poultry once a quarter, ham twice a quarter, and liver once a quarter.

Fish:

After studying the acceptability of fish in the institutions, it is recommended that fresh fish and canned salmon be increased, sardines decreased and dried codfish deleted.

Potatoes:

This increase in the meat ration will necessitate similar revision in the potato ration. It is recommended that potatoes be increased from 48.02 pounds to 51 pounds and that rice be decreased from 2.47 pounds to 1.56 pounds.

Miscellaneous Groceries:

The quantities of miscellaneous groceries used in the institutions indicate that tea, baking powder, baking soda, gelatin, and shortening should be reduced and that slight increases be made in mustard, lemon and vanilla flavoring, crackers, vinegar, and salad oil.

Cereals:

Changes in breakfast cereals are also under consideration. Prepared cereals (cornflakes, etc.) are now served five times a quarter. Hot cereals are served all other times. Reports from several institutions indicate that cooked cereals are becoming less popular with patients, particularly during the hot summer months. Plate waste data from the Stockton Pilot Study shows cereal waste can be reduced approximately 70% by serving cornflakes in place of hot cooked cereal. In the proposed revision, unprepared cereals will be reduced from 8.64 pounds to 7.5 pounds and the prepared cereals will be increased from .313 to .81 pounds. This will provide one serving of prepared cereal (cornflakes, etc.) per week.

Dairy Products:

In order to provide each patient with one pint of fluid milk each day for drinking and cereals, the recommended milk increase is from 11.5 gallons per quarter to 13.5 gallons per quarter. This also provides 2.5 ounces per day for cooking plus a 2 percent distribution loss. Other changes in dairy produce are an increase in the egg ration from 5 to 7 per week, and the addition of 1-1/2 pats of butter per day, thus making it possible for patients to have butter with each meal. At the present time, butter is served twice daily.

TREATMENT RATION

Under the proposed new feeding plan, treatment patients will be served the same general base ration as all other patients. Their special food needs will be recognized by making the following amendments to the general base ration:

Foods Added:

Add 2 cans of fruit juice thus providing a total of four 7-ounce servings per week; add 2 pounds of cottage cheese, thus providing one 3-1/2 ounce serving per week; add 9.69 gallons milk per quarter, thus providing 1 quart daily.

APPENDIX F

Foods Deleted:

Delete aged cheese and dried beans because of their indigestability. With these supplementary foods and the general basic ration, it should be possible to fill all special diets prescribed by attending physician.

NURSERY RATION

Under the proposed new feeding plan, nursery patients will be served the same general base ration as all other patients. Their need for a mechanically soft diet and fewer calories will be obtained by modifying the general basic ration as follows:

Foods Deleted:

All pie fruit, coffee, tea, fresh grapefruit, pickles, mustard, aged cheese, dried beans, and dried whole fruits.

Foods Reduced:

Meat, sugar, and macaroni.

Foods Added:

1 can fruit juice, thus providing 3 servings per week; 1 pound cocoa, thus providing hot chocolate once daily; 2 pounds cottage cheese, thus providing 3-1/2 ounces per week; 9.69 gallons milk, thus providing 1 quart daily; and replace dried whole fruit with dried fruit nuggets. The dried fruit nuggets have all pits removed and the fruits are cut into bite size pieces. It is recommended that this product be used exclusively for nursery patients since it greatly facilitates serving, actually costs no more per serving and is highly acceptable in variety, color, and flavor.

SERVING SCHEDULE OF MAJOR FOOD ITEMS

FOOD ITEM	PRESENT RATION	REVISED RATION
Fresh Vegetables	1 lb. per day	1 lb. per day
Canned Vegetables	3 x week	3 x week
Fresh Fruit:		
Oranges	2 x week	3 x week
Grapefruit	None	Alternate weeks
Bananas	None	2 x quarter
Canned Fruit (table)	3 x week	4 x week
Canned Fruit (pie)	2 x month	1 x week
Dried Fruit	7 x week	3 x week
Fruit Juice	None	1 x week
Flavored Gelatin	3 x quarter	10 x quarter
Macaroni and Paste	2 x week	2 x week
Potatoes	1 x day	1 x day
Cornflakes	1 x month	1 x week
Milk	16 oz. per day	18 oz. per day
Ice Cream	2 x month	3 x month

APPENDIX F

FOOD ITEM	PRESENT RATION	REVISED RATION
Eggs	5 per week	7 per week
Butter	2 pats per day	3 pats per day
Meat & Poultry*	3 lbs. per week	4 lbs. per week
Fresh Fish	4 x quarter	7 x quarter
Bread	1/2 lb. per day	1/2 lb. per day

*Meat and Poultry and carcass weight. Edible portion is approximately 60% of the total weight.

NOTE: One quarter contains 13 weeks; 91 days.

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